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SCRAPBOOKS
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RG No. 12
Series No. 01

Pullman Company.
Secretary's Office.

Series A,
Miscellaneous,
Scrapbooks,
1865-1925.

BIBLIOGRAPHIC RECORD TARGET

THE NEWBERRY LIBRARY

PULLMAN COMPANY ARCHIVES
SCRAPBOOKS

Pullman Company. Secretary's Office.

Series A, Miscellaneous, scrapbooks, 1865-1925.

10 cubic ft. (34 vol.)

Series arranged chronologically.

General scrapbooks assembled by the Secretary's Office of the Pullman's Palace Car Company and, after 1899, the Pullman Company.

Newspaper and magazine clippings from around the United States and Europe about the company from prior to its incorporation in 1867 to shortly after its reorganization in 1924. Included are articles concerning all facets of Pullman operations. Among the many topics covered are car improvements and innovations, train excursions, operations in Europe, new routes, employee and labor matters, the Pullman Building in Chicago, monopoly investigations, the acquisition of competitor sleeping car companies, segregated travel, etc. There are also articles regarding Chicago individuals and events, and personnel changes and other general railroad news.

Unpublished inventory available in the library.

Forms part of Record Group No. 12 (Scrapbooks), Pullman Company Archives.

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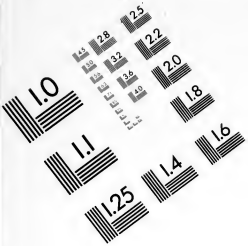

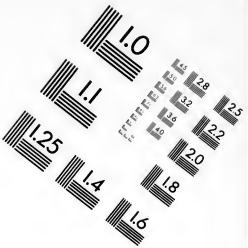

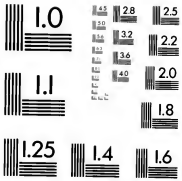

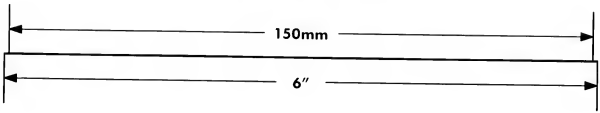

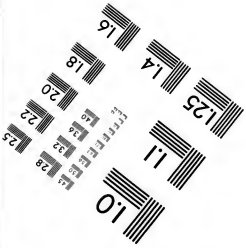

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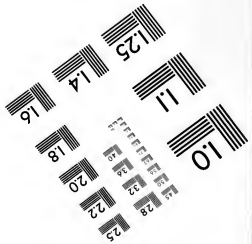

SERIES 01

VOL. 30

June 1, 1906

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Oct. 7, 1914

RAILWAY AGE
JUNE 1. 1906.

WORKINGS OF THE PENNSYLVANIA'S RETIREMENT AND PENSION PLAN.

On January 1, 1900, the Pennsylvania Railroad Company inaugurated a beneficent movement which will be followed eventually by all great transportation lines, when it put in force a fixed plan under which all officers and employes must retire from the service when they have reached the age of 70 years, and thereupon become entitled to a monthly pension for the remainder of their lives. The plan also provides that employes who, being between the ages of 65 and 69 inclusive, shall have been 30 or more years in the service of the company, and shall then be physically disqualified, shall be relieved and placed on the pension roll. This provision gives opportunity for exception to the general rule that 70 years of age, without regard to length of previous employment, shall constitute the limit of active service. There is, also, a modifying clause to the effect that persons irrespective of the age limit, may be employed "where the service for which they are needed requires professional or other special qualifications," but it appears to be the intention to apply the age test strictly to all classes of employes, from the president down, and under its workings a considerable number of the principal officers, as well as a large number of nonofficial employes, will be eligible for retirement within the next few years.

The wisdom and beneficence of the pension system already have been demonstrated by results. During its six years of operation on the Pennsylvania Railroad, up to January last, 2,700 employes have been retired as pensioners from the active service of the company, of which number 890 have died. Of the total number retired, 688 were between the ages of 65 and 69 years, of whom 546 were retired on their own request, with the approval of the employing officer. The pension allowances authorized to be paid in that period aggregated $2,004,087.59, made up each year as follows: 1905, $390,000; 1904, $390,000; 1903, $359,374.32; 1902, $328,403.10; 1901, $293,290.20, and 1900, $244,019.97. It will be seen that in four years the payments grew from $244,000 to $390,000, reaching in 1904 the limit fixed by the directors at present.

The above expenditure does not include the expenses of operation of the department, which also are borne by the company.

The following is a list of officers of the Pennsylvania lines east of Pittsburg, to the number of 17, who have been retired since the establishment of the pension fund, the date of retirement being appended:

John A. Anderson, superintendent relief department, January 1, 1900.
George W. I. Ball, chief conveyancer, January 1, 1900.
Ed. W. Coffin, division freight agent W. J. & S. R. R., January 1, 1900.
E. S. Young, division ticket agent N. C. Ry., January 1, 1900.
A. C. Davis, terminal and shipping agent, March 1, 1902.
John C. Wilson, real estate agent, May 1, 1902.
Benjamin F. Crawford, cashier treasury department, April 1, 1903.
F. Wolcott Jackson, resident manager U. R. R. of N. J. division, September 1, 1903.
S. S. Blair, superintendent Tyrone division, November 1, 1903.
R. W. Downing, comptroller, February 1, 1905.
G. C. Wilkins, general agent, Baltimore, February 1, 1905.
E. H. Fyle, secretary and treasurer various companies, November 1, 1905.
F. G. Osborn, master lighterman, February 1, 1906.
William H. Brown, chief engineer, March 1, 1906.
R. W. Smith, treasurer, May 1, 1906.
Samuel Anderson, auditor miscellaneous receipts and accounts, May 1, 1906.
Robert Pitcairn, resident assistant to the president, June 1, 1906.

None of the present officers of the Pennsylvania Railroad will reach the 70-year limit until 1908, when the superintendent of the insurance department, Mr. Ely, will be the only candidate for retirement. Three years hence President Cassatt and First Vice-President Green will be of age, and five years hence, in 1911, Second Vice-President Pugh will have reached threescore and ten. Of the more

tion is made with the Northern Pacific.

On January 1, 1900, the Pennsylvania Railroad Company took the initiative in a beneficent movement which had long been in the minds of American railway managers, by endowing and setting in operation a retirement and pension system for its super-annuated employes. In the six years now elapsed 2,700 Pennsylvania Railroad men—of whom only 17 were general officers—have been honorably retired for age or physical disability and placed on the pension roll for life; and toward their support the company has already disbursed over $2,000,000. One year later the pension system was extended to the lines of the Pennsylvania Company west of Pittsburg, and in the five years elapsed 873 men have been pensioned, at a cost, so far, of $816,390. On all the lines of the Pennsylvania system, therefore, 3,573 former employes have received from the companies $2,810,000 since they ceased to render any service, in just

recognition of long-continued, faithful labors. The plan thus experimentally adopted appears to have worked satisfactorily, and it has formed the basis upon which various other great railway companies have established retirement and pension systems. The principal change which experience is likely to require in these systems will consist in materially increasing the appropriations of the several companies, by which alone the pension funds are provided. The Pennsylvania directors at the outset limited the amount to be spent in any one year to $300,000, but in two years increased the limit to $390,000, and this is already exceeded by the demands. The Pennsylvania Company provided $150,000 as the maximum in any year and speedily overran it. The Chicago & Northwestern, which established its pension system one year later than the Pennsylvania, still finds its $200,000 annual appropriation more than sufficient, although the yearly increase in claims is suggestive for the future. But whatever it may cost the pension principle is now firmly established on American railways, and with the inauguration on July 1 of a pension plan upon the 12,000 miles of lines forming the New York Central system almost all the great railway companies in the country will be committed to the practice of age retirement and pensioning for all their employes.

RAILWAY AGE
JUNE 1. 1906.

than 70 other officers now on the company's published list, perhaps 20 have passed the age of 60, but the majority are from 10 to 30 years away from the retirement limit.

One year after its establishment on the Pennsylvania roads east the pension system was extended to the Pennsylvania Lines West of Pittsburg, under precisely the same regulations. During the five years of operation, to December 31, 1905, on the lines west, there has been authorized to be paid in pension allowances to retired officers and employes the sum of $816,390, as follows: 1901, $116,097; 1902, $141,435.60; 1903, $162,005.40; 1904, $184,526.40; 1905, $212,325.60. It will be seen that the expenditure for pensions last year was not far from double that in the first year.

The above expenditures do not include the expenses of operation of the department, which, as well as the pension payments, are borne by the company, without any contributions from employes.

During the five years in which the pension plan has been in operation on the Pennsylvania Lines West, 873 employes have been retired from the active service of the company under pension regulations, of which number 215 have died. Of the total number retired, 180 were between the ages of 65 and 70 years, and of these 117 were retired at their own request, with the approval of their employing officers.

The following is a list of the officers who have been retired under the regulations of the pension fund of the Pennsylvania Lines West of Pittsburg since its inauguration on January 1, 1901, viz.:

James P. Farley, auditor of passenger receipts, January 1, 1901.
John P. Henderson, assistant treasurer, January 1, 1901.
Reuben F. Smith, superintendent relief department, January 1, 1901.
David S. Gray, manager and general agent Star Union Line, January 1, 1901.
J. F. Miller, general superintendent P. C. C. & St. L. Ry. Co., January 1, 1901.
James Means, division freight agent P. C. C. & St. L. Ry. Co., January 1, 1902.
S. P. Gray, general western and division freight agent P. C. C. & St. L. Ry. Co., January 1, 1904.
William A. Baldwin, president C. & M. Ry. Co., May 1, 1906.

No officer of the Pennsylvania Lines, with the exception of President Cassatt, will reach the age limit for four years, and the majority may look forward to many more years of active service, reaching on, in the case of the superintendent of motive power, to the remote year 1938.

Emergency Engineering.

An excellent example of emergency engineering was afforded at the beginning of the past winter by a large electric central station which, partly through accident and partly because of rapid growth of its business, found itself seriously short of steam generating capacity, with no prospect of being able soon to supply it through boiler house addition. With the station located by the riverside, taking steam from an adjoining steamboat, suggested itself as a solution of the difficulty, and a plan to that effect was accordingly carried out. A large passenger steamship, out of commission at the time, and laid up for the winter, was chartered, brought alongside the power house dock, and her boilers, disconnected from her own engines, were suitably connected with the supply system of the station. The connections were a series of large inverted U-shaped flexible copper pipes, uniting a steam manifold on the power station dock with a manifold on the upper deck of the steamer, the manifold on the dock being in communication with the main steam header in the station, and the manifold on the boat communicating with the latter's boilers. The U bends provided satisfactorily for the rise and fall of the steamer with the tides, affording a maximum range of about 7 feet. The whole expedient rendered good service for several months.—Cassier's Magazine.

The Chicago, Burlington & Quincy has ordered 100 steel underframe box cars of 80,000 lbs. capacity from the Standard Steel Car Co., for August delivery, in addition to the 1,900 cars ordered from the Pullman Co. reported in our issue of May 25. These cars will measure 40 ft. long, 8 ft. 6 in. wide and 8 ft. high, inside measurements.

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EDITORIAL ANNOUNCEMENTS.

THE BRITISH AND EASTERN CONTINENTS edition of the Railroad Gazette is published each Friday at Queen Anne's Chambers, Westminster, London. It consists of most of the reading pages of the Railroad Gazette, together with additional British and foreign matter, and is issued under the name Railway Gazette.

CONTRIBUTIONS.—Subscribers and others will materially assist in making our news accurate and complete if they will send early information of events which take place under their observation. Discussions of subjects pertaining to all departments of railroad business by men practically acquainted with them are especially desired.

ADVERTISEMENTS.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and these only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers, can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

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VOL. XL., No. 26. FRIDAY, JUNE 29, 1906.

The sentence of two rate cutters to imprisonment, reported from Kansas City last week, has led to a great deal of comment by the newspapers and, according to Chicago reporters, to much introspection and humble resolving to reform on the part of railroad freight agents in that city. These agents have not learned so very much new about the law, but they have seen a new light concerning its enforcement. From the public standpoint the salient feature of the case is the imprisonment of the agents. Equally interesting is the question how the Government has suddenly found itself able to discover evidence of lawbreaking, and has so cunningly introduced the imprisonment penalty where it was supposed that the only allowable punishment was a fine. Imprisonment is made possible by proceeding, not under the Interstate Commerce law alone, but also under Section 5,440 of the Revised Statutes:

> "If two or more persons conspire either to commit any offense against the United States, or to defraud the United States in any manner or for any purpose, and one or more of such parties do any act to effect the object of the conspiracy, all the parties to such conspiracy shall be liable to a penalty of not less than $100, and not more than $10,000, and to imprisonment for not more than two years."

This law was brought to notice last September when four officers of Schwarzschild & Sulzberger, Chicago packers, pleaded guilty to conspiracy and were fined $25,000. The only explanation that is forthcoming concerning the Government's present activity, after 13 years of indolence or futility, is the Attorney-General's circular of a few months ago to district attorneys throughout the country. The President ordered these officers of the law to abandon their policy of indifference and they abandoned it. As to the railroad men's part in this case, Messrs. Thomas and Taggart presumably received from the railroads just plain, straight commissions, as soliciting agents; and proof that in such a case the railroad officers conspired may have been difficult or impossible to find. A railroad officer who knows that one of his agents divides his commissions with a shipper or consignee is morally guilty of making illegal rates; but he may be able to avoid committing himself by any word or deed that will convict him. He is skating on very thin ice, however, for a Court of Equity will stand no fooling, once it is convinced that the officer knows what the money is used for.

CHANGE IN THE LAW OF NEGLIGENCE.

The law relating to injuries sustained by employees of common carriers approved June 11, 1906, imposes a liability for damages upon many carriers engaged in interstate commerce, from which they have been heretofore entirely exempt. By this Act Congress has changed one of the cardinal principles of the law of negligence as enforced in the federal courts and in the courts of most of the states. Except in a few states which have enacted statutes on the subject, the rule has always been that every employee on entering service took the risk of damage flowing from the negligence of a fellow servant, for which he could not seek indemnity from the common master. From the dawn of the law, a man has been held liable to outside parties for the consequences of his own conduct as well as for the consequences of the conduct of his servants while engaged on his business. But the policy of the law never favored making the master liable for injuries sustained by one servant for the carelessness of a fellow servant. As, however, some servants were far above others in intelligence and authority, an exceptance was grafted upon the general law, whereby the master was held to answer for the negligence of those superior employees who to a great extent assumed, in dealing with other employees, the functions of the master. With this exception the courts of this country have adhered to the doctrine that no employee could recover for the carelessness of another employee, however gross and however great the damage caused thereby.

The legislatures of some states have changed the rule by statute but for the most part in this country the courts have stood by this ancient principle and resisted any encroachment upon it.

Congress has at last taken a hand in the matter, and by the law recently enacted has provided that common carriers engaged in interstate and foreign commerce shall be liable under certain conditions for damages occasioned by the negligence of co-employees.

This liability runs first to the injured employee; in case of his death, to his personal representative for the benefit of his widow and children, if any; if none, to his parents; if none, to his next of kin dependent upon him. It will be seen that the law is designed merely to protect the unfortunate employee personally, or if dead, his widow and children or parents, or kin dependent upon him. If no such persons are in existence, the liability of the carrier does not attach, as the conditions therefor do not exist.

But this may be matter of defense which if not set up by the carrier may not appear, and whatever does not appear in the law, may as well not be. These limitations upon the application of the law will doubtless afford the carrier an opportunity to escape liability in numerous instances. For there are many men in the service of railroads who have no domestic ties or near relationships and many who float from one employer to another, and in case of death from accident, leave behind them little information of their antecedents or connections. But while the limitation of liability in such cases will be substantial, yet, after allowing for that, the losses the carriers will have to face from the enactment of this law will be very heavy every year, and a wide new column in the expense account will have to be added in the bookkeeping of all the roads. For accidents happen in great numbers during the year, of the kind contemplated by this law, or which a jury at least will find are protected by the law, whatever the fact be. And as the law makes the jury the judge of the fact of negligence, one has no difficulty in reaching the conclusion that every accident will be found to be due to the negligence of some one except the unfortunate victim.

We may therefore judge from the statistics quite accurately what the railroads will have to pay each year in addition to fixed charges, if we can only approximate a fair allowance to apportion to each accident reported.

We are unwilling to say that this change in the law is not a development in the right direction. It has always seemed hard that the victim of carelessness other than his own should not have some substantial redress. The law has doubtless always given him a claim against the individual whose personal negligence caused the injury, but the poverty of the wrongdoer has quite invariably rendered this remedy of no practical advantage. The change in the law transfers this liability from an irresponsible servant to a responsible master and so wipes out the exception to the doctrine that what one does through another, he does himself. The negligence of the servant employed by the master is thus imputed to the master and the action of the servant is the action of the master, as to the fellow servant as well as to every one else.

To avoid, or at least to diminish, the heavy loss to which all the carriers will be subjected by this law, it will be necessary, first, to revise the rules for the prevention of accidents; next, to promulgate others more adequate; and then to see to the strict enforcement of them. This will tend inevitably to save life and limb, and to that extent at least the law will exercise a salutary influence and accomplish a world of good.

To soften the hardship of this new liability, the statute still allows the defense of contributory negligence of the injured employee to be interposed, but it makes a distinction between slight and gross negligence of this character, and provides that when the injured servant's contributory negligence was slight and that of the other was gross, it shall not bar recovery but the jury shall diminish the damages in proportion to the amount of damages attributable to the contributory negligence. This sounds well theoretically, but in the actual administration of justice it will be impossible for a jury of the ordinary kind to divide with any degree of accuracy the damages between slight and gross negligence, and knock from the damage to the victim, as required by the statute, just that particular sum which measures the slightness of his contributory negligence. This is too foggy to be enforceable, and too unjurylike to expect that they will pay, even if they could, the slightest respect to it.

Another provision of the law may prove less illusory. This permits the carrier to deduct from damages any sum it has contributed toward any insurance, relief benefit, or indemnity for injury or death that may have been paid to the injured employee or to his personal representative. To ascertain the sum may require some nice calculations in tracing what portion of the carrier's contribution to a general fund finds its way to the benefit of any particular employee, but the result, when reached, the carrier is surely entitled to claim, in reduction of the general damages.

A carrier may perhaps obviate liability under this law, if in every case he exacts from each employee on entering and renewing service a release from all damages accruing from the negligence of co-employees. And perhaps a more popular safeguard would be found in specifying a limit of liability, not exceeding a certain sum to be agreed on. But perhaps, again, the wisest and most far-seeing plan, after all, will be to accept in good faith this change in the law, as the development of a conservative public opinion, and provide for meeting its increased burdens as if it had come to stay.

CONVENTIONS, NEW AND OLD.

It would be difficult to exaggerate the importance to the technical and railroad world of the conventions of the Master Car Builders' and Master Mechanics' Associations that are held in June of each year. The days when they were looked upon askance by the managers and were little more than a junket have long since passed away, and in their stead we have a gathering that is noted for the steadfastness of its purpose and the high character of the work that is done. It is interesting to note in passing how the very influence that it was thought would act as a damper on the assembly has proven to be of inestimable value. A year ago, when it was proposed to hold the meeting of the International Railway Congress in Washington, it was thought that it would detract from those of the two associations that were to be held so soon afterwards at Manhattan Beach. Contrary to expectations, the Washington meeting served to show the managers and presidents what manner of men these were that were in the habit of coming together in June, and the exhibitors, realizing the advantages gained at Washington, gathered up their goods *en bloc* and showed them at Manhattan Beach, thus making that meeting a record-breaker, not only in point of attendance, but also in the space covered by the exhibits.

The success of the convention show of last year evidently had its effect, since the record this year, not only on the part of the supplymen but also on that of the members, was again broken with the unparalleled total attendance of more than 4,500 people. A big gathering is not all that is needed, however, to make the conventions the success that they should be and have been. Technical work of a high order is demanded, and that has been forthcoming to a marked degree in the reports submitted this month. The work of the Master Car Builders' Association was passed in partial review in the *Railroad Gazette* last week, and attention was called to the change in the methods of handling subjects from the old-time delicacy that refrained from "naming names," thus leaving the reader in absolute darkness as to the relative value of the articles discussed, to that of telling in open court all that is to be known on the subject. The increased value of reports under this new regime will, of course, be appreciated at once. In addition to these minor items and to the technical value of the other reports submitted, there was one that marked in a striking manner the changed conditions that have been brought about in the past 20 years.

Many remember the struggle that Mr. Rhodes had at the time of the Burlington brake tests in 1887, and the criticism to which he was subjected because he insisted that those tests should be made with trains 50 cars long. Events proved the soundness of Mr. Rhodes' position, and we have all been duly thankful for his firmness. This year, the committee on triple valves reports that, after having made all of its arrangements to test the new Westinghouse triple valve on the rack of the association at Purdue, the makers objected on the ground that a 50-car train did not represent present conditions, and that unless the work were to be done on a rack for 80 or 100 cars they would not submit it for trial. The committee promptly acknowledged the reasonableness of the objection and accepted the offer of the Westinghouse company of the use of its rack, and the work was done there. Once in a while we have a startling instance of the growth of modern power during the past quarter of a century, and surely this is one of those cases. Twenty years ago the whole railroad community, brake manufacturers included, was unanimous in declaring that 50 cars would constitute a train of needless length in order to show everything that could be shown in the action of continuous brakes, and such a train was in itself of a very unusual length. To-day, a brake company declares that a train of 50 cars is so short that it is absolutely worthless for full demonstration of the company's product, and the committee in charge of the work acknowledges that the company is right, without a word of argument.

In the Master Mechanics' Association the most notable report presented was probably that on the smokebox; a report that has really been in preparation for the past ten years, ever since the time when Prof. Goss first took up the investigation of the action of the blast upon the fire. Some previous work had been done in Germany, and the principle of the action of the exhaust was fairly well understood, though the details of the application to American

B

Railway Age June 29.06.

Colorado & Southern expects to receive this week one new dining car from the Pullman Company, which has contracts for 43 passenger equipment cars for that road, including 25 coaches, eight baggage cars and nine combination cars.

Mexican Central is in the market for 750 steel under-

Damages for Cold Sleeping Car.—Suit has been commenced against the St. Louis & San Francisco by D. F. Crilly of Chicago, claiming damages to $50,000, because the compartment which he had engaged in a Pullman car on a trip from Hot Springs, Ark., to Saint Augustine, Fla., was cold so that when he reached the destination several hours late he was suffering from rheumatism and was obliged to return to Hot Springs for further treatment.

THE RAILROAD GAZETTE.

July. 13.06

American Car & Foundry Company.

The annual report for the year ended April 30, 1906, covers only two pages and shows no more in regard to the company's affairs than is included in the general balance sheet, a statement of net earnings and their disposition, and a statement of working capital. Some further information in regard to operation was given at the annual meeting by the President. The printed report makes no reference to gross earnings, but, according to this statement, gross earnings for the year were about $74,000,000. The sum of $5,648,553 mentioned in the report as earnings from all sources apparently represents net earnings after operating expenses. The record of net earnings after operating expenses for the past four years is significant of the fluctuation of the car building industry. The net earnings of $5,600,000 in 1906 compare with $3,800,000 in 1905, $5,600,000 in 1904, and $8,400,000 in 1903, the last the company's record figure. From the 1906 figure, there was deducted for renewals, replacements, repairs, new patterns, flasks, etc., $1,490,103, as well as $350,791 for new construction, leaving $3,807,660 as net earnings after these deductions for betterments. A dividend of 7 per cent. was paid on the preferred stock, and in addition an extra payment of 1¼ per cent. was made on July 1, 1905, to bring dividend periods and quarterly reports in conformity with the fiscal year. The total dividend payments of $2,450,000 left the year's surplus at $1,357,660, or 4.52 per cent. on the $30,000,000 common stock. This sum was added to the previous profit and loss credit balance, raising the total surplus to $14,113,094.

The balance sheet shows an addition of $1,266,681 to the item Cost of properties, plants, etc., for new plants and extensions, bringing the item to $59,371,979. Materials on hand amounted to $19,150,000 against $11,930,000 in 1905, a large increase which is balanced by an increase slightly larger in audited vouchers. Stocks and bonds of other companies, carried at $1,280,888, earned on the average 12 per cent. during the year against 11 per cent. in the year previous. The statement of working capital shows a gain of $90,979 over the amount on April 30, 1905, making the working capital at the close of the year $14,741,115.

The President reported that during the year the company manufactured 73,540 cars—72,757 freight cars and 783 passenger cars. Of the freight cars, 38,239 were of wood and 34,518 of steel construction. Of the 783 passenger cars 564 were wood and 219 steel. The company also made 949,951 car wheels. The total car production—73,540—compares with 35,857 cars of all kinds built in the preceding fiscal year, which shows the great increase in business during the recent year. Orders on hand at the beginning of the new year amounted to 71,369 cars against 44,000 cars a year previous. On April 30 the company was employing 27,807 men at its various plants. It is no surprise to learn that the year was a prosperous one and from present indications it seems entirely probable that the current year will prove equally satisfactory to the company's business.

The Chesapeake & Ohio has ordered one dining car from the [illegible] Pullman Co.

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bodies were wearing out more rapidly than nature ever intended. Somewhere between these extremes should be found a rate for human labor which is adjusted to the workman's actual capacity, under which he would flourish as a plant or tree, under careful cultivation, and become thrifty, healthy and happy. This may be a high ideal when contrasted with the ordinary condition of the employment of labor, and difficult of application, but the principle should not be entirely lost sight of whenever wages are based on a fixed output, or are calculated to stimulate a continued larger production.

THE WEAKNESS OF FOREIGN PASSENGER CARS.

The illustrations of the recent wreck of the boat train on the London & Southwestern Railway at Salisbury, England, which have appeared in the daily papers, and more clearly in the London weekly railway journals, give some idea of the complete destruction of the cars and the wide extent over which the debris was scattered. They also show, as is usual in foreign wrecks, the underframe entirely stripped of the superstructure. The bodies of the three coaches which carried passengers were reduced to splinters and the roof of the second car is seen on top of the overturned tender. It is plain also from illustrations that the underframes were made of wood built up of only four longitudinal sills and the center sills were not continuous but made of short pieces framed into the transoms, a form of construction which would not be accepted in freight car interchange in this country. The accident occurred on a transition curve, having a radius of 500 feet at the sharpest point and the maximum elevation of the outer rail was 3½ inches. The running rules allowed a maximum speed of 30 miles per hour. The track was in excellent shape and comparatively little damage was sustained by it.

The editorial comments of the technical papers in England thus far deal in speculations as to the cause of the accident and the danger of passing sharp curves at high speeds, but the results of the accident as seen in the complete destruction of the cars has not as yet suggested to them any useful lesson. The comparative immunity from loss of life in passenger traffic has been the proud boast of British railway managers for many years, and considering the light construction and comparative weakness of the car equipment, this record must be regarded as rather the result of discipline and care in operation, which is truly marvelous. The substantial character of the track, the complete equipment of the signal apparatus, the large proportion of men employed to guard the safety of the roadway and great skill and care in dispatching, all contribute to a degree of safety in operation which is not approached in this country and in but few other foreign countries. The passenger car equipment of foreign roads in general, however, is not equal to that found on American roads in matters which contribute to ordinary comfort and much less in those qualities which secure the safety of the passengers.

It seems difficult for the foreigner to get away from the stage coach idea. After he is compelled to use steel underframes he builds a wooden body with curved sides like a carriage and fastens the two parts together with a few small bolts and considers that he has made a safe vehicle for high speed traffic. The strong steel underframe which is used in the best modern passenger equipment in England is a feature much to be commended, but the construction of the car body, and especially the manner in which it is secured to the underframe, must be regarded as elements of weakness. Unlike American cars the body portion above the sills is a separate structure with an attachment so light and unsubstantial that it is found convenient in the shop while under repairs to detach the body portion of the car entirely from the sills. In order to prevent noise from the track from being transmitted through the rigid steel frame, the sills are covered with a thin strip of pine and on this is a continuous line of rubber ⅝ inch thick. There is therefore between the carriage body and steel sills a space one inch deep and this soft filling allows the bolts easily to be bent and broken in collision. There is here one lesson to be learned by American car builders in the development of steel passenger car construction which is now so actively under way. With American wooden cars the sides are thoroughly anchored to the sills by numerous tenons and bolts and a complete separation of the car body from the sills never occurs even in the most violent collisions unless it is sheared directly or crushed. In a composite structure, where steel underframes are used in connection with wooden sides, the method of properly securing the two may be somewhat neglected, and in the design of such cars care should be taken to make this feature as safe and substantial as possible.

In another collision on an English road just about a year ago—that of the electric cars on the Lancashire & Yorkshire Railway—the car bodies lifted from the trucks and sheared through each other, killing 20 passengers. This was due to the use of rather heavy motor trucks and light car bodies and the want of proper fastening to secure the car body to the truck. Such accidents do not frequently occur to express trains in this country on account of the heavy weight of the car body.

In the Salisbury accident 23 passengers and four trainmen were killed and these two disasters are the worst which have occurred on English roads for many years. The board of trade report on the Lancashire & Yorkshire Railway had little or nothing to say about the character of car equipment and it will be interesting to see if report on the Salisbury disaster will find that there is room for improvement in the construction of English cars which would result in less loss of life in similar accidents.

It is well known that very few foreign roads have adopted automatic couplers for either freight or passenger cars and the screw couplers which are in general use in passenger service are so constructed that the whole load due to the pull of the locomotive is concentrated on a square-threaded screw having a diameter of only 1¼ or 2 inches. When compared with the heavy yoke and steel automatic couplers in use in this country such a coupling for a heavy express train must be regarded as ridiculously weak. The double buffers with light springs allow a considerable free slack between the cars and they cannot be regarded as having anything like the strength and safety which attend the use of the central coupler and vestibule buffer. The continued use of the weak screw couplers has been largely instrumental in preventing the introduction of the high-speed brake as the slight surging due to the quick application of such powerful brake would cause the trains to part.

The weak points in European cars are mainly the separate construction of the sills and superstructure which allow them to become detached in collision; the use of side doors which prevent the sides of the car from contributing to the strength of the structure as a girder; the use of light screw couplers which have comparatively little strength and which cannot be made stronger as they become too heavy for a man to lift; the use of a type of brake whose efficiency is limited to the strength of couplers; and the double buffers with weak springs which allow too much free slack and too much space between the cars and which are not as safe on curves as the central buffers. In all these respects the American vestibuled train is superior in the element of safety and the improvements in foreign passenger equipment, such as the use of corridor cars and bogie trucks, have consistently followed American practice. On the continent, especially in Germany and Belgium, millions of dollars are expended for monumental stations in the large cities, which contribute little to the comfort of travel, while thousands of small, weak and uncomfortable cars are retained in passen-

ger service. If a portion of this immense sum, which could easily have been spared from the station appropriation, had been applied to the purchase of strong, safe and comfortable passenger cars, foreign travel would be far more attractive and the loss of life would be greatly reduced when accidents like that at Salisbury occur.

It is claimed by a prominent and respected London contemporary that there is far less risk in railroad travel in Europe than in America, but this is certainly not due to the character of the car equipment. So far as this is concerned it is positively more dangerous. American first-class passenger trains are without doubt the most comfortable, the strongest and the safest of any of the world and with equal care in operation, travel on American roads would be safer than in any other country.

RAILWAY AGE July 20.06 (and) July 27.06

Employes' Contracts Waiving Right to Sue for Injuries.

The Iowa legislature in 1898 enacted the "Temple amendment," the object of which was to confer on railway employes the right to sue their employers for damages for personal injuries, although they had signed away that right by contracting not to sue if they accepted benefits from the relief department of the railroad, supported in part by the company and in part by the members. In defending a suit for damages, brought against the Burlington railroad company by Charles L. Mosiure, the company assailed the Temple amendment as violative of the federal constitution, and of the Iowa constitution which guarantees equal protection. The Appanoose District court held the amendment to be unconstitutional. The state supreme court on July 14—three judges concurring and two judges dissenting—reversed this judgment and sustained the constitutionality of the amendment, thus nullifying a vital provision in the regulations of co-operative railway relief departments in Iowa.

In considering the case the two dissenting judges held the amendment to be unconstitutional on two propositions—that although it would have been within the constitutional powers of the legislature in originally enacting code section 2071, relating to the liability of railroad corporations for personal injury damages, to have protected the right thereby created by a provision such as is contained in the Temple amendment, yet the right having in fact created without it the subsequent addition of such protection is an unconstitutional discrimination against the railway company, and, that the classification by which railway companies alone are made subject to such statutory restrictions is arbitrary and unreasonable and therefore is unconstitutional and void.

Per contra, for the proposition that a provision which could have been constitutionally embodied in the original act cannot be constitutionally added by amendment, the majority of the court, says the decision, can find neither authority nor precedent nor principle. The state cannot exhaust its constitutional power to legislate on a subject by the creation of a statutory right or liability. The majority of the court does not assail or question the advantage of the Burlington relief department contract; that is not the question at issue. The portion of the contract not barring suit was prohibited by the Temple amendment and it is not for the court to inquire except as to the validity of the law; the circumstances were for the legislature to consider.

The supreme court has held the Burlington relief department contract to be valid and not void as against public policy before the Temple amendment was passed. Was the Temple amendment, therefore, a reasonable restriction on the right of contract guaranteed by the constitution? The majority of the court thinks so.

The original law, section 2071, sought to confer on railroad employes the right to sue their employes for damages for personal injuries. This was in part avoided by the relief system referred to. The Temple amendment was enacted to re-establish or reinforce the right so created. It fenced against frustration of the intent of the original statute to confer a substantial benefit on a large class of citizens engaged in a hazardous quasi public employment.

"That the railroad's relief department," says the majority of the supreme court, "was devised to require or induce its employes to pool their contributions and through the medium of an insurance or benefit fund made up chiefly by deductions from their wages, pay their own losses and thus, in some degree, relieve the corporation from the liability imposed by the statute, is not seriously disputed."

Moreover, the court declares, the legislature might well have believed that while membership in the relief department was voluntary in a legal sense, it still was possible for the company to have exercised influence amounting to moral coercion on employes to join. Indeed the decision intimated those who did not join were classed as "thoughtless and improvident" and were the "first to go" whenever the service was cut down.

European Passenger Rates.—General Passenger Agent Hatch of the Illinois Central has returned from a European trip with the conviction that, except in the matter of the courtesy of employes, American railways are serving the public better and more cheaply than those of other countries. He says: "The railways of Great Britain and continental Europe are well managed, have good roadbeds, make fast time and there is a generous air of courtesy on the part of all employes, but the rates, the vital point, are much higher than the charges on American roads. Particularly is this true of sleeping car fares. I paid $5 for one night's ride, that is, it was called a night from 11 p. m. to 7 a. m. The first class passenger fares are also unusually high from an American standard. The system of handling baggage does not exist at all. Every pound of baggage not carried by a passenger is charged for. In consequence, everybody over there is carrying a load of baggage, and I presume it is this custom that causes so many foreigners traveling in the United States to carry so much baggage—just to keep their hands on it and to save charges. One does not fully appreciate the conveniences of American railroads until one has used those of Europe."

Pullman Company.—The 4 per cent tax on gross receipts in Texas paid by this company for the quarter ended June 20 amounted to $4,063, its gross receipts in the state being $101,344.63.

Richmond Fredericksburg & Potomac has ordered one cafe-parlor car from the Pullman Company.

Hocking Valley, as noted in our issue of June 29, has ordered 1,500 box cars of 60,000 pounds capacity from the Pullman Company for February, 1907, delivery, and has practically closed for 100 flat cars of 80,000 pounds capacity. The specifications include the following details:

Underframes	Ralston steel	Journal bearings	
Bolsters, truck	Simplex		Streeter pattern
Brakebeams	Simplex	Journal boxes	McCord
Brakeshoes	Streeter steel back	Roofs	Excelsior
Brakes	New York	Side bearings	Wood
Couplers	Tower and Buckeye	Springs	
Door fastenings	Dayton	Ry. Steel Spring and Union Spring	
Doors	Security fixtures	Trucks	Andrews truck frame
Draft rigging	Miner		
Dust guards	American		

Protection for Women's Hats en Route.—After many weeks of experimenting, General Passenger Agent Cleland, of the Northern Pacific, has perfected a novelty for the use of women travelers on sleeping cars, which has been supplied to the sleeping cars of through trains on the railway. It is a receptacle, constructed of very tough paper of light weight, in which may be placed hats and gloves, veils, light jackets and similar articles of wear which are not in use while occupying sleeping car berths, and in which these articles may be protected. Each paper receptacle is so constructed that after light articles have been placed within it, the top may be closed and it may be hung up, out of the way. Each is sufficiently strong to bear the weight of several different articles and is of sufficient capacity to contain many of the usual belongings of women travelers. They are of attractive appearance and when not in use may be folded into very small space and packed away in the corner of an ordinary hand bag. All the Pullman sleeping cars of the Northern Pacific Railway will carry a supply of these novelties and sleeping car porters have been instructed to distribute them to women patrons of the line.

Chicago & Northwestern, as reported last week, has contracted with the Pullman Company for additional equipment. The order calls for 1,600 freight cars, 60 passenger cars and 25 cabooses, and as at present divided there will be 500 box and 500 flat cars of 80,000 pounds capacity and 300 stock and 300 coal cars of 60,000 pounds capacity. This division is subject to change.

Georgia Railroad has ordered four passenger coaches, three combination baggage and passenger and two baggage cars from the Pullman Company.

WAY AGE August 3, 1906.

Notes and News.

Steel Passenger Car in a Wreck.

In a wreck on the Erie road, near Burbank, O., one of the steel mail cars was derailed and plunged down a 12-foot embankment. The car turned over three times, but was very slightly damaged and the two mail clerks escaped with a few slight bruises. The baggage and express cars immediately behind the mail car were made of wood and they also plunged down the embankment, but were badly mashed. This is the first steel passenger car to go through a wreck in this country, and the favorable showing will tend to further encourage the use of steel for passenger car equipment.

RAILWAY REVIEW Aug 4. 06.

Mr. Felton Compares English and American Railways.

Mr. S. M. Felton, president of the Chicago & Alton R. R., who is now traveling abroad, recently made a comparison of English and American railroads with respect to safety of operation. In a newspaper interview at London he was quoted as follows: "The two countries seem to be solving their problems each in the way best suited to its own needs. I do not believe that the American railways can be properly considered worse than the English roads in the matter of accidents. We can show as good records for short journeys as can the English. The Illinois Central suburban service in Chicago, for example, may properly be compared with the English lines, and I do not think it has ever killed a passenger. Long journeys inevitably involve more danger than short ones. That our roads should be able to compare as well as they do with the English roads is surprising. The lines here are completely fenced in and carefully guarded. There are no grade crossings, the tracks are elevated in the cities, the block signal is in general use, the roadbeds are old and fully settled, and nearly every line is double-tracked. American roads, so far as conditions will permit, will be brought up to this standard. The Pennsylvania, between New York and Washington, for instance, is abolishing grade crossings, elevating its tracks in the cities, and adopting every known safeguard to avert accidents. Obviously our lines across the plains must remain exposed to such dangers as arise from cattle getting on the tracks, but nothing possible will be omitted to reduce the peril connected with the immense problem of transportation on a continent so vast as ours, inhabitated by so many millions of energetic and industrious people. Our railways still make America an ideal country for the young man by bringing new worlds within his reach. I am telling my English young friends to pack their traps and go West, either along the Grand Trunk Pacific or to the farther reaches of our own transcontinental lines."

safety should be a first consideration, careful attention to design of structural details would often save a considerable amount of dead weight without any sacrifice of the safety features.

INSURANCE AGAINST DISHONESTY OF EMPLOYES.

The practice of "bonding" officials and other employes occupying positions of fiduciary responsibility has become general in all departments of commercial and industrial life—banking, manufacturing, mercantile, transportation and other forms of activity, both individual and corporate, and extending to incumbents of public offices. Numerous bonding and indemnity companies have come into existence and have established a system of personal-honesty insurance whereby, for a fee based somewhat on the amount of financial responsibility involved, the employe can secure credentials of trustworthiness and the employer can feel guarded against loss by betrayal of confidence. The old embarrassing and often disastrous way of getting a good-natured friend to "go bond" for the honesty and faithfulness of the man seeking employment in a responsible position is replaced by a matter-of-course transaction in which the bonding company, after proper investigation into the candidate's antecedents, becomes sponsor for his financial uprightness, for a pecuniary consideration. Commonly the employe pays the bonding fee, though in numerous cases the employer, especially when a corporation, makes a wholesale contract with a bonding company for all its money-handling employes and is satisfied to pay the expense of the insurance.

So common and generally satisfactory apparently has the bonding principle become throughout the country that it is somewhat surprising to read that the superintendent of insurance of the state of Kansas has started proceedings looking to revocation of the charter of one of the large surety companies, on the ground that it is violating the anti-trust and anti-blacklisting laws of the state. The offense against the anti-trust law the attorney general has discovered to consist in the fact that a given railway company contracts with a given surety company to bond its employes, thus giving one concern a monopoly and—it is assumed—"allowing it to fix its own price for bonding these men, or ensuring their fidelity." Moreover many other railway and express companies in the state have contracts with the same surety company which the attorney general thinks "puts in the hands of this company the power to raise the rates of insurance to employes to a rate which in many cases will prove to be prohibitive." No intimation is given that the rates charged at present are too high, and the fear that they may be made so would hardly seem to justify revocation of the charters of the twenty or so surety companies operating in Kansas. Legislation limiting the rates of insurance to reasonable figures would seem more advisable than ousting the companies on suspicion, especially in view of the fact that in some cases the employers pay the surety fee themselves.

The real cause of the movement against the surety companies seems to lie in the charge that they are "blacklisting" railway and express employes. A Kansas statute provides:

> Any employer of labor in this state, after having discharged any person from his service, shall not prevent or attempt to prevent by word, sign, or writing of any kind whatsoever any such discharged employe from obtaining employment from any other person, company or corporation, except by furnishing in writing on request the cause of such discharge.

After quoting this provision the attorney general reasons as follows:

> The principal effect of permitting this insurance company to furnish all the insurance of this character for many, if not all of the express and railroad companies of the state, is to put within its power the right to deny employment to any employe who happens to have trouble with his employer, while his faithfulness or fidelity to duty is being insured by this company. The employer reports the breach of service to the surety company. The surety company at once strikes the name of the employe from its list of permissible risks. In other words, the employe is blacklisted from that time on because he can not obtain a bond with this company, and his employers refuse to employ him in this class of employment without it.

There is possibility of injustice in all human tribunals. Railway operative officers, examining boards, labor organizations, juries, even judges may err in their judgments and wrong innocent men and absolve guilty men; but this is no reason for abolishing restraints upon dishonesty and unfaithfulness. Honest men have no occasion to fear precautions taken against embezzlers, and the faithful employe is in no danger of being blacklisted. The concern of the surety company solely is with the pecuniary trust committed to the insured, and the Kansas attorney general strikes a low note when he defines investigation into possible embezzlement or robbery by an employe as "happening to have trouble with his employer."

Neither railway officers nor surety companies want to have employes prove unfaithful or incur suspicion; they have no motive for "blacklisting" innocent men, or men under investigation; rather the reverse. The attorney general does great injustice to railway officers in assuming as a practice action which he has conceived of as a possibility. Railways are managed on a higher level of morality than this, and it is the misfortune, not the fault of the employers, that they are obliged to take precautions against dishonesty, rarely though it exists among their employes.

The rates and methods of surety companies ought to be strictly supervised and restrained in every state, but the principle of guaranteeing the fidelity of those handling the property of others is universally conceded to be advantageous to both parties, and the objections offered in Kansas do not appear reasonable or true.

Chicago & Northwestern has increased its order with the Pullman Company from 1600 cars, as reported on July 27, to 2,100 cars. These are in addition to the 2,500 cars for which the American Car & Foundry Company were getting prices last week.

Locomotive & Car Works.

Illinois Central has contracted with the Pullman company for 25 coaches, 10 baggage cars, 8 combination mail and baggage cars, 5 chair cars and 2 mail cars.

Elmira Water, Light & Railroad Company, Elmira, N. Y., has

The Union Railroad of Pittsburg is reported to have ordered 500 steel ore cars from the Pressed Steel Car Co.

The Wabash, it is reported, is asking prices on 4,000 cars of 100,000 lbs. capacity and 2,000 cars of 80,000 lbs. capacity.

The Tonopah & Goldfield has ordered one passenger car, one express and mail car and one baggage car from the Pullman Co.

The Northern Pacific is in the market for from 3,000 to 5,000 box cars, and will probably ask bids for 500 stock and 500 gondolas.

The Harriman Lines are in the market for 4,000 box cars, 1,400 flat cars, 1,000 refrigerator cars, 875 oil tank cars, 600 hopper cars, 500 gondola cars and 500 stock cars.

The Illinois Central has ordered 20 passenger coaches, 5 chair cars, 2 mail cars, 10 baggage cars and 8 combination mail and baggage cars from the Pullman Co.

The Charlotte Harbor & Northern is in the market for 30 drop bottom gondola cars, 20 ventilated box cars, four coaches and two combination passenger and baggage cars.

The Chicago, Rock Island & Pacific, it is reported, has reserved space with the American Car & Foundry Co. for 5,000 box cars and is asking bids on 5,000 additional box cars.

The Chicago & North-Western has ordered 700 box cars of 80,000 lbs. capacity, 500 flat cars of 80,000 lbs. capacity, 300 gondola cars of 80,000 lbs. capacity, 600 stock cars of 60,000 lbs. capacity, 25 cabooses, 20 vestibule coaches, ten 60-ft. baggage cars, 10 combination passenger and baggage cars, 4 dining cars, 3 standard parlor cars, 3 observation parlor cars and 10 chair cars from the Pullman Co., and 1,000 box cars of 80,000 lbs. capacity and 400 ore cars from Haskell & Barker. The dimensions and specifications are Chicago & North-Western standard, the same as the last ordered. (Nov. 17, 1905, p. 158.)

The Nashville, Chattanooga & St. Louis is building 500 gondola cars of 80,000 lbs. capacity at its Nashville shops. The dimensions and special equipment are as follows: Weight, 35,000 lbs.; length over all, 36 ft. 9 in.; width over all, 9 ft. 9 in.; height over all, 8 ft. 3 in.; Commonwealth Steel Co.'s bolsters, Simplex Railway Appliance Co.'s brake-beams, Westinghouse brakes, N., C. & St. L. brasses, Tower couplers, N., C. & St. L. doors, Thornburgh draft rigging, N., C. & St. L. dust guards and journal boxes, Railway Steel Spring Co.'s springs, N., C. & St. L. trucks, and Louisville Car Wheel Co.'s wheels.

RAILWAY REVIEW.
Aug 11, 06.

—An agreement between the St. Louis & San Francisco and the Pullman company, of Chicago, under the terms of which the former is to purchase certain cars from the Pullman company, has been filed in Missouri. The road agrees to purchase 10 chair cars for $120,000 and six passenger and mail cars for $53,838.

Pennsylvania Steel Coach—Interior.

Pennsylvania Steel Coach—Exterior.

THE NEW PENNSYLVANIA STEEL COACH.

The Pennsylvania Railroad has designed and built at Altoona a sample steel coach and illustrations of the exterior and interior are here presented. It resembles in general outline the standard wooden coach of this line, but the steel construction is evident from the rivets along the lower edge and also in the new design of the truck, having a riveted steel wheel piece. The principal feature of the underframe is a central box girder 24 inches wide and 19 inches deep extending throughout the length of the car. The entire side of the car is made of steel plates and extra strength is provided in the door and vestibule posts which are heavy, rolled-steel beams. The flooring consists of corrugated steel plates over which is spread a cement covering, which is not only fireproof, but assists in deadening the noise from the rail. The doors are composed of steel plates pressed into shape, imitating the wooden doors used in other cars, and they are filled with cork to deaden the sound. The roof is constructed of composite boards covered with copper sheeting, and the inside lining consists of composite boards covered with fireproof paint.

The seat frames and foot-rests are of steel and the seats are covered with fireproofed plush. The arm rests are of wood but experiments are being made with various materials in order to secure a non-combustible substance which will not be cold to the touch. In the design great care has been exercised and no expense has been spared to obtain a coach

which shall provide the greatest possible strength and which will be fireproof, and it has been difficult to find material for the inside finish which will be fireproof and at the same time not conduct heat or sound to a degree which is not admissible.

The new car weighs 103,550 pounds as compared with 84,900 pounds for the standard wooden coach. The extra weight is caused to some extent by the burden involved in carrying storage batteries and in the heavy fireproof floor. The new steel car has been placed in service on one of the company's regular local runs and observations are made, not only in regard to its ordinary service, but also to ascertain the effect of the atmosphere on the steel as compared with that on the wooden cars. It is found that the temperature of the interior of the steel car is not very different from that of the wooden car, but the steel car shows a decided tendency to cool off more rapidly than the wooden car. It is understood that the Pennsylvania will soon build a large number of steel cars similar to the sample, for use when the New York tunnel is completed and it has also requested the Pullman Company to make designs for steel construction in sleeping cars to be used on the Pennsylvania lines. These plans are now under way.

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Railway Review.
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Railway Age
Aug 17. 06

Shippers Complain in All Languages.

Passenger travel in Europe is about one-third more expensive than in the United States. Second-class rates are about the same as our first-class or regular rates, while the European first-class charges are about 33 per cent higher and the charges for sleeping car accommodations are just about double the regular Pullman tariff in the United States. European passenger rates need regulating very badly, and if Mr. Tillman would bring his pitchfork over to Germany or Russia he would find plenty of opportunities to use it. We are not the only people afflicted with overcharges and discriminations in transportation. Every shipper, wherever you go, in all parts of the universe, has the same complaint to make and the same story is told in every civilized language. In all my travels I have never yet discovered a railway Utopia where the tariffs are satisfactory to all concerned and where no discriminations are made. Great Britain is supposed to be thoroughly "regulated" so far as transportation arrangements are concerned, but the other day I heard an indignant shipper asserting that he had to pay as much to send a package of goods from London to Canterbury as it cost him to send the same thing to Norway, and he felt like pulling the railroad up by the roots to get even. In Germany on the government lines, as well as those owned by private corporations, shippers find dissatisfaction for the same reasons, and I suppose it is also true in France and elsewhere. In Russia the government controls everything and is arbitrary but just. The minister of communication, Prince Khilkoff, who was educated in America, knows his business. He is probably the best railroad man in Europe.—Wm. E. Curtis in Chicago Record-Herald.

Chicago & Northwestern, as previously reported, has placed orders for over 6,000 cars. The complete list and division is as follows: 700 box cars of 80,000 pounds capacity, 500 flat cars of 80,000 pounds capacity, 300 gondola cars of 80,000 pounds capacity, 600 stock cars of 60,000 pounds capacity, 25 caboooses, 20 vestibule coaches, 5 baggage cars, 10 combination baggage and passenger cars, 4 dining cars, 3 parlor cars, 3 observation parlor cars and 10 chair cars, all of which are to be built by the Pullman Company. The Haskell & Barker Car Company have orders from the Northwestern for 1,000 box cars of 80,000 pounds capacity and 400 ore cars of 80,000 pounds capacity and the American Car & Foundry Company will build 1,500 box, 300 flat and 700 gondola cars, all of which are to be of 80,000 pounds capacity. Deliveries on the above equipment are to be commenced in September and completed within six months.

Pere Marquette was reported in March to have ordered 2,000 box cars of 80,000 pounds capacity from the Pullman Company and to be considering the purchase of 1,000 gondola cars. Contracts for the gondola cars were not signed and it is now reported that an order will be placed for 500 cars of this class.

Morelli & Tazzamaro, as reported last week, has contracted with the Pullman Company for passenger equipment. The cars which are to be built are one first-class coach, one second-class coach, two third-class coaches and one baggage, mail and express car.

Railway Gazette
Aug 24. 06

The city of Chicago is seeking to have all the cars owned by the Pullman Company included in the company's assessment in Cook County.

Railway Review.
Aug 25. 06.

—The Pullman Co. reports that the year ended July 31 last was the most prosperous in the history of the company. After charging off for depreciation and betterments to a greater degree than ever before, there remained a surplus applicable to dividends of about $13,000,000, or equal to about 17½ per cent on the $74,000,000 capital stock. In 1905 the earnings on the stock were 13.4 per cent; in 1904 12.9 per cent, and in 1903, 12.7 per cent. Earnings for the preceding three years were as follows:

	1905.	1904.	1903.
Gross earnge ..	$26,922,022	$24,788,729	$23,120,713
Oper exps	13,884,983	12,254,160	10,389,459
Total net ...	$10,054,457	$9,661,602	$9,417,690

—The Grand Trunk Pacific has ordered of the

Pullman Railroad.—Incorporated in Illinois to build a railroad from Pullman to Pullman Junction, Kensington, harbors on Calumet river and Calumet lake and to a point on the Indiana state line. Capital stock, $125,000. Incorporators: Richmond Dean, F. F. Meyers, J. L. Wood, F. B. Johnstone, C. F. Jobson, Chicago.

Railway Age Aug 31. 06.

Nashville Chattanooga & St. Louis has ordered four coaches and two passenger and baggage cars from the Pullman Company.

Illinois Central, as reported in our issue of August 10, has contracted with the Pullman Company for twenty 61-foot coaches, five 61-foot chair cars, ten 61-foot baggage cars, two 60-foot postal and eight 66-foot postal and baggage cars, for delivery in January and February, 1907. Some of the dimensions of each are as follows:

Coaches.

Length—
Inside, 60 ft. ½-in.
Over all, 67 ft. 11 in.
Width—
Inside, 9 ft. ½-in.
Over all, 10 ft. 5 in.
Height—
To deck sill, 7 ft. 9 11-16 in.
Over all, 14 ft. 5 11-16 in.
Four wheel—40-ton trucks.
Body, wood.
Underframe, wood.

Chair Cars.

Length—
Inside, 60 ft. ½-in.
Over all, 67 ft. 11 in.
Width—
Inside, 9 ft. ½-in.
Over all, 10 ft. 5 in.
Height—
To deck sill, 7 ft. 9 11-16 in.
Over all, 14 ft. 5 11-16 in.
Four wheel—40-ton trucks.
Body, wood.
Underframe, wood.

Baggage Cars.

Length—
Inside, 60 ft. 4¾ in.
Over all, 64 ft. 2 in.
Width—
Inside, 9 ft. 4¾ in.
Over all 10 ft. 4¼ in.
Height—
To deck sill, 7 ft. 8⅞ in.
Over all, 14 ft. 2¾ in.
Six wheel trucks.
Body, wood.
Underframe, wood.

Postal Cars.

Length—
Inside, 60 ft.
Over all, 63 ft. 9½ in.
Width—
Inside, 9 ft. 1 in.
Over all 10 ft. ¼ in.
Height—
To deck sill, 7 ft. 7½ in.
Over all, 14 ft. 3 in.

Postal and Baggage Cars.

Length—
Inside, 65 ft. ⅜ in.
Over all, 68 ft. 10 in.
Width—
Inside, 9 ft. 4¾ in.
Over all, 10 ft. 4¼ in.
Height—
To deck sill, 7 ft. 8⅞ in.
Over all, 14 ft. 2¾ in.

Pere Marquette ordered from the Pullman Company early this year, as reported in The Railway Age at that time, 2,000 box cars

of 80,000 pounds capacity. The cars are for delivery on December 31, 1906, and the specifications include the following:

Length—
Inside.....36 ft.
Over sills.....36 ft. 7¾ in.
Width—
Inside.....8 ft. 6 in.
Over eaves.....9 ft. 5 in.
Height—
Inside.....8 ft. 6 in.
Over brake beam.14 ft. 2 7-16 in.
Over run'g b'd.13 ft. 5 1-16 in.
Body.....Wood
Underframe.....Wood

Special Equipment.

Axles, 5x9 in.....
.....Steel from Billets,
Pullman make, weight 705 lbs.
Bolsters.....
Amer. Steel Fdy.'s cast steel
Truck.....Simplex built up
Brakebeams .....
5 in.—12½ lbs. steel I-beams

Brakes .....Westinghouse
Center bearings .....
.....Steel cast with bolsters
Couplers .....Janney
Door fastenings..N. M. C. Co.'s
Doors.....Security fixtures
Draft rigging...Miner tandem
Dust guards.....Positive
Journal bearings.....Climax
Journal boxes.....Symington
Paint .....Prince's
Mineral brown (three coats)
Roofs.....Chicago improved Winslow metal inside
Side bearings.....
.....Steel cast with bolsters
Springs.....Ry. St. Spng. Co.
Trucks..Barber Lateral motion
Wheels.....33-in. cast iron

Railway Review July 14. 06.

New equipment for the Hocking Valley is being completed by the Pullman company and will be delivered to the road some time in August. The order, which was placed recently, calls for three observation cars, of the most modern construction, five vestibule coaches and two 70-foot baggage cars.

The St. Louis Southwestern has ordered 20 locomotives from the Baldwin Locomotive Works.

The Central of Brazil has ordered six locomotives from the Baldwin Locomotive Works.

The Chicago, Burlington & Quincy has ordered 100 steel underframe box cars of 80,000 pounds capacity from the Standard Steel Car Co. for August delivery, in addition to 1900 cars previously ordered from the Pullman company. These cars will measure 40 feet long, 8 feet 6 inches wide and 8 feet high, inside measurements.

Sept. 8. 06.

—The Chicago Burlington & Quincy has ordered four dining cars from the Pullman Co.

Railway Age
Sept. 14. 06.

An aggravation of heart trouble by sitting up all night is held, in Ingraham v. the Pullman Co. (Mass.) 2 L.R.A.(N.S.) 1087, not to be the proximate result of a carrier's refusal to furnish a passenger with a drawing room on a certain train, where it offered to supply one on a train leaving a few hours later, or other sleeping accommodations on the same train.

A provision in a railroad ticket that, in case of dispute between passenger and conductor, the passenger must pay his fare and apply to the company for redress, is held, in Cherry v. Chicago & A. R. Co. (Mo.) 2 L.R.A.(N.S.) 695, to be unreasonable, and not binding on the passenger.

A passenger's relation to the carrier is held, in Glenn v. Lake Erie & W. R. Co. (Ind.) 2 L.R.A.(N.S.) 872, to have terminated when

Harriman Lines have ordered freight equipment as reported last week and are in the market for 191 cars for passenger equipment. The complete order for freight cars is as follows: Rodger Ballast Car Company, 350 Hart convertible cars; Cambria Steel Company, 600 steel hopper cars and 500 steel gondola cars; Standard Steel Car Company, 1450 steel underframe flat cars and 100 flat car bodies; Pressed Steel Car Company, 625 tank cars, 500 stock cars and 4,050 steel underframe box cars; American Car & Foundry Company, 6,000 refrigerator cars; Pullman Company, 96 caboose cars. Specifications and dates of delivery for most of this equipment were published last week.

Railway Age
Sept 21. 06

Colorado Southern New Orleans & Pacific has ordered 500 steel underframe box cars of 80,000 pounds capacity, 250 steel underframe flat cars of 80,000 pounds capacity, 200 steel underframe ballast cars of 100,000 pounds capacity, and 75 oil tank cars of 10,500 gallons capacity from the American Car & Foundry Company, and from the Pullman Company four 66-foot baggage cars, four 70-foot baggage and mail cars and twelve 70-foot coaches. Twenty cabooses have not yet been contracted for.

Tonopah & Goldfield has ordered from the Pullman Company, for delivery in November 1906, one passenger coach, one chair car, one baggage car and one express and mail car, as reported in the Railway Age for August 3. The specifications include the following:

Length over all—	Width over all—
Passenger coach.....60 ft.	Passenger coach.....9 ft. 8 in.
Baggage car.....60 ft. 7¼ in.	Baggage car.....9 ft. 8 in.

SPECIAL EQUIPMENT.

Axles .....Steel	Wheels .....So. Pac. std.
Bolsters, body.....Cast steel	Heating system.....Safety
Brakebeams...Diamond special	Lighting system.....Oil lamps
Brakeshoes .....Christie	Platforms .....Standard steel
Brakes .....New York	Seats .....Hale & Kilburn
Center bearings.....	Interior finish coach and chair
.....Cast steel with bolster	car .....Mexican mahogany
Journal bearings.....Hewitt	Interior finish baggage car.
Journal boxes.....So. Pac. std.	..... Poplar
Paint .....So. Pac. std.	Interior finish express and
Side bearings.....	mail car.....Yellow pine
.....Miner gravity roller	Varnish .....Murphy
Trucks.....Rwy. std. 4-wheel	Vestibules .....Pullman

Railroad Gazette Sept 28.06.

The Colorado Southern, New Orleans & Pacific has ordered 200 steel underframe ballast cars of 100,000 lbs. capacity from the Rodger Ballast Car Co., to be built by the American Car & Foundry Co., for March to May, 1907, delivery; and twelve 70-ft. coaches, four 70-ft. baggage and mail cars and four 60-ft. baggage cars from the Pullman Co., for January and February, 1907, delivery. Orders for 20 cabooses are still pending.

Railway Review Sept 29.06.

Law Interpretations.

The Transcontinental Passenger Association has received from a committee of executive officers of the railroads west of Chicago, through Mr. J. C. Stubbs, chairman, the following instructions regarding the new rate law, based on advice of legal counsel:

Free transportation cannot be given land and immigration agents unless they are employees in such sense that the carriers legally could give them transportation as a pass or gratuity. There is no authority in law for making lower rates to land seekers and settlers than for other travelers. Transportation cannot be issued in payment for advertising. It is generally accepted, however, that carriers may carry an open account with publishers and that publishers may carry an open account with carriers for advertising, and that these accounts can be balanced periodically. The balance, whatever it may be, must be paid in cash. The transaction must be devoid of previous agreement that the service done by either party for the other is to be paid for in any other way than by cash.

Whether the present practice of posting stations a circular advising the public that complete passenger tariffs are on file in the ticket office may be continued under the new law, is yet to be determined by the commerce commission.

Whether supplements may be issued or complete tariffs must be reissued when changes are necessary is an open question entirely within the discretion of the interstate commerce commission.

Railway companies operating their own sleeping cars must publish and file their sleeping car rates. The committee does not believe baggage and transfer companies come within the term "common carriers," and are amenable to the act, although the matter is open to question. The exception of railway mail service employees, post-office inspectors, customs inspectors, immigration inspectors, newsboys on trains, baggage agents, and managers of soldiers' homes from the free pass prohibition permits them to be hauled on personal and individual account as well as while on duty. Special reduced rates may be made for federal and state troops, and officers and employees of the United States geological survey and reclamation service, in the future as in the past.

The words of the law excepting "inmates of hospitals and charitable and eleemosynary institutions and persons engaged in charitable and missionary work" from the free pass prohibition are held not to apply to doctors, nurses, and other employees.

Nuns, sisters of charity, missionaries, evangelists, national or state officers of religious organizations, teachers and pupils in Indian schools, officers of the Salvation Army and Volunteers of America, etc., it is held, may be given free transportation.

Special rates for theatrical companies, baseball clubs, etc., are discriminatory and should be taken care of under the party rate rules. Special rates for army and naval officers and their families, which always have been made in the past, are held unlawful. The interchange of transportation by common carriers for the use of officers and employees and their families may be made with sleeping car, express and steamship companies, but not with telegraph and telephone companies. Time limits on tickets may be extended on account of sickness or for other good cause if the action be taken in good faith. Free transportation may not be issued to members of railroad employees' unions who are not in the employ of a railroad company.

—Contracts have been let by the New York Central for 17,070 new freight cars. Of this order contracts were taken by the American Car & Foundry Co. for 3000 50-ton gondola cars and 2000 40-ton box cars; by the Pullman Co. for 4000 box cars; by the Standard Steel Car Co. for 1370 50-ton steel hopper gondolas and 3000 steel underframe gondolas; by Barney & Smith for 1000 50-ton steel gondolas and 650 box cars. These cars, when received, will be divided among the roads of the system as follows: New York Central, 4000; Lake Shore, 4200; Michigan Central, 3700; Big Four, 1100; Peoria & Eastern, 500; Chicago, Indiana & Southern, 3500.

—The Colorado, Southern, New Orleans & Pacific has ordered from the American Car & Foundry Co., 500 steel underframe box cars of 80,000 lbs. capacity, 250 steel underframe flat cars of 80,000 lbs. capacity, 200 steel underframe ballast cars of 100,000 lbs. capacity, and 75 oil tank cars of 10,500 gals. capacity. The road has also ordered from the Pullman Company four 66-foot baggage cars.

Railroad Gazette
Oct 12. 06

Pullman Company.—Edward W. Hanck has been elected chairman of a stockholders' committee, which is trying to get a larger dividend rate and a distribution of part of the present surplus of about $27,000,000. A committee composed of Henry E. Smith, of New York; A. B. Kellogg, of Buffalo, and E. W. Hanck, is to prepare the plan and go to the annual meeting of the company next November, to present its formal request to the Board of Directors. The board will be asked the purpose for which the surplus is being accumulated.

Pere Marquette, as previously reported, has ordered 2,000 additional box cars of 80,000 pounds capacity from the Pullman Company. The 2,000 cars included in the first order are to be delivered by January 1, 1907, and the date of the second lot of 2,000 is not fixed. The specifications include the following:

Length inside.....36 ft	Height inside.....8 ft. 6 in.
Over end sills.....8 ft. 6 in.	Over running board.....
Width inside.....8 ft. 6 in.	.....13 ft. 6½ in.
Over all.....9 ft. 6½ in.	

SPECIAL EQUIPMENT.

Axles .....Steel	Draft rigging.....Miner tandem
from billets, Pullman make.	Dust guards .....Positive.
Bolsters .....Steel	Journal bearings .....Climax.
...American Steel Foundries.	Journal boxes.....Symington.
Brakes ..... Westinghouse.	Paint..Prince's Mineral Brown.
Couplers .....Janney.	Roofs.....Improved Winslow.
Door fastenings .....Security.	Trucks..Barber Lateral Motion.

THE RAILWAY AGE
Oct 12. 06

Chicago Rock Island & Pacific has ordered ten baggage cars, ten combination baggage and smoking cars, ten chair cars and ten coaches from the American Car & Foundry Company and from the Pullman Company fifteen additional cars for passenger equipment.

Chicago Milwaukee & St. Paul has ordered eight sleeping cars and three parlor cars from the Pullman Company for delivery prior to April 15, 1907, and from Barney & Smith Car Company has ordered 50 coaches and three dining cars. Twenty-five coaches and three dining cars are to be delivered prior to April 15, 1907, and the balance before June 1.

New York New Haven & Hartford as indicated last week has ordered passenger equipment. The contract was placed with the Pullman Company but we are unable to learn the number of cars included in the order.

Railway Review Oct 6. 06

—The Harriman Lines have ordered 84 caboose cars from the Pullman Co.

—The Boston & Maine has ordered from the Pullman Co. 50 coaches and eight dining cars. The road has also ordered 1000 box cars of 60,000 lbs. capacity from the Laconia Car Co. for delivery beginning in 1907 and extending over about four months.

—The Baldwin Locomotive Works is building eight locomotives for the Georgia, Florida & Alabama Ry.

—The Pere Marquette has ordered from the Pullman Co. 2000 box cars.

Oct 27. 06

The Pullman Company is building an all steel sleeping car. A feature of the construction is cast steel combination of body bolsters, sill and platform in one piece.

Oct 13. 06.

—The Grand Trunk has placed large orders for freight equipment as follows: From the Pullman Co. 1000 box cars of 60,000 lbs. capacity and 1000 flat cars of 60,000 lbs. capacity; from the Hicks Locomotive & Car Works 500 furniture cars of 60,000 lbs. capacity and 500 flat cars of 60,000 lbs. capacity; from H. M. Treadwell & Co., Lebanon, Pa., 1000 cars; from the Mount Vernon Car Manufacturing Co., 1000 cars.

—The Lake Shore & Michigan Southern has ordered 25 61-ft. coaches of the Pullman Co.

—The Chicago, Indiana & Southern has ordered from the Pullman Co., six coaches and two 70-ft passenger and baggage cars. Two baggage cars have been ordered built in the shops of the road.

—The Cleveland, Cincinnati, Chicago & St. Louis has ordered six horse express cars from the Barney & Smith Car Co.

Oct 20. 06.

Pullman Affairs.

At the last meeting in New York City of the stockholders of the Pullman Company, who are striving to obtain larger dividends and a distribution of the $27,000,000 surplus, it was decided to open friendly negotiations with the Pullman management and impress upon it the reasons why large dividends should be declared. About 5000 shares were represented at the meeting. In this connection we note the Texas Railway Commission has been applied to for an order to reduce Pullman rates to $1.50 for lower berths and $1.00 for upper berths. The complainants, the National Farmers' Union were referred to the state legislature for an authorizing law.

Railway Gazette. Nov 2. 06.

According to press despatches, the Pullman Company is not going to publish, post or file its tariffs or send them to the Interstate Commerce Commission. The company takes the ground that it is not a common carrier; that its services are the same as those performed by hotels.

Nov. 9. 06.

At Altoona, Pa., two suits have been begun by State food inspectors against the Pullman company for selling on dining cars milk and cream containing formaldehyde.

Railway Review Nov. 10. 06

The Pullman Company.

It is stated that Mr. Robert T. Lincoln has decided to retire from the presidency of The Pullman Co., and will be succeeded by Mr. John S. Runnells, legal counsel of the company. The annual stockholders' meeting takes place next Tuesday, and it is stated that a plan will be adopted for distribution of the surplus of $35,000,000, by making a stock dividend of 35 per cent, increasing the stock from $74,000,000 to $109,000,000. The plan is said to involve maintaining the present dividend rate of 8 per cent. Another important step in contemplation is said to be the construction of a thoroughly modern plant of large capacity for building steel cars. This is a recurrence to the plans of Mr. Pullman, who fully contemplated building such a plant.

Nov 10. 06

Texas to Reduce Pullman Rates.

The Texas Railroad Commission will make an effort to compel the Pullman Co. to reduce its rates in Texas 20 per cent from the present rates. On Nov. 6 the commission issued a notice of hearing for Nov. 27, at which time it will take up and consider the promulgation of an order requiring all railroad companies in Texas to continue hauling sleeping cars, and that such railroads shall haul sleepers on all trains when ordered by the commission. The order also embraces the promulgation of a schedule of charges to be collected by the railroad companies from passengers desiring to avail themselves of sleepers, which will be on a basis of 20 per cent less than the present rates.

Railway Age
Nov 23. 06.

Claim on the Pullman Company for Taxes.—John C. Richberg, representing Corporation Counsel Lewis of the city of Chicago, appeared before the capitol stock committee of the Illinois board of equalization on November 20 and presented figures and arguments to show that the Pullman Company should pay taxes in Cook county for 1906 amounting to $2,310,468, which is nearly $2,000,000 more than the company paid last year. The claim to this tax seems to rest upon an assessment of the capital stock at its par value after deducting the value of the property taxed in Cook county, but not deducting that taxed elsewhere.

Pennsylvania has asked bids of the American Car & Foundry Company, Standard Steel Car Company and the Pressed Steel Car Company on 100 all-steel passenger cars. The company's shops at Altoona will very shortly complete the all-steel baggage car which is in the course of construction there as well as an all-steel postal car. The motive power department has approved designs for the all-steel dining car and work on an experimental car of this character will be started at once. The Pullman Company is to build an all-steel sleeping car.

RAILWAY AGE
NOV 30. 06

Pullman Company Fined For Milkmen's Sin.—The Pullman Company has issued the following statement: "The cases brought against the Pullman Company by the health authorities of the state of Pennsylvania charging the sale of milk and cream containing formaldehyde were tried last week. It was not contended that the company acted otherwise than in good faith nor that it did not buy its milk and cream and use them in the belief that they were pure and free from all objectionable ingredients. Accordingly the minimum penalty was imposed, although the court found that the preservative was not put in by the defendant nor with its knowledge, but that the law required the punishment even in such a case in order to compel the exercise of greater care in respect to the sources of supply."

Reduced Transportation Rulings of the Texas Commission.—The newspaper press has been publishing some misleading statements of the orders recently issued by the railway commission of Texas in regard to reduced transportation. The commission has ruled that reduced rates may be made to the following: "Employes and members of their families when traveling on the line with which they are connected; indigent persons or authenticated cases of charity; licensed or ordained ministers of the gospel in regular charge of churches, ordained clergymen, brothers and sisters of religious orders, regularly appointed missionaries, evangelists who hold proper commissions, salvation army officers, etc.; all other classes of reduced rates which are open to the public alike and not restricted to any class or clan, and whereby discrimination is not practiced, including homeseekers; traveling secretaries of Young Men's Christian Associations, inmates of the national homes, state homes for disabled soldiers and sailors, confederate home inmates at Austin, etc." The commisson has refused to approve reduced rates "for employes of connecting lines and members of their families, for postal clerks and members of their families, for all United States army and naval officers, for employes of the Wells-Fargo, Pacific, American and United States express companies and members of their families, to Pullman employes and members of their families, post office inspectors, customs inspectors, etc.; for side trip at reduced rates to homeseekers, where it is stipulated that the person entitled to such reduced rates shall hold a homeseekers' ticket bought at an interstate point and which is deemed by a majority of the commission as a discrimination against a citizen of Texas who desires to make the same trip, but who would have to pay full fare."

RAILROAD GAZETTE NOV. 30. 06.

The Chicago & Eastern Illinois has ordered three buffet library cars and three chair cars from the Pullman Company.

RAILWAY REVIEW DEC. 1. 06

Pullman Taxes.

The recent distribution of the $27,000,000 Pullman surplus has drawn the attention of the Chicago tax collectors. The latter claim that taxes should be paid on the full amount of capital stock. In his argument Attorney Richberg said: "We contend that the Pullman Company should be assessed on its capital stock at market value as of April 2, 1906. The corporation's shares of stock at a market value of about $240 make a total of $177,600,000. This amount is subject to deduction of all tangible property of the company assessed in Cook county. I take the position that the property of the company assessed in other states should not be deducted. The rolling stock of the company belongs here in Illinois and as such is subject to taxation."

SAMUEL SPENCER.

The public estimate of Samuel Spencer was assisted to definite formulation during the past eighteen months by recurrent indications of the clarity of his vision during the confusion of issues necessarily incident to the framing and enactment of an important law affecting the railroads and shippers of the country. And it is difficult to point to any public man in America, other than the president of the United States, whose sudden and tragic death would have caused greater concern than did the death of President Spencer, in a wreck of his own railroad. Mr. Spencer was a clear-headed, thorough student, not only of all railroad problems, but of all general industrial and economic conditions, particularly those affecting the south—to the upbuilding of which he gave his maturest energies in the same spirit in which he gave to that section of the country, in which he was born, his earliest patriotic allegiance.

He was born in Columbus, Ga., on March 2, 1847, the son of a prosperous storekeeper, in time to take a youthful but spirited part in the civil war. His apparent instinct for acquiring a systematic and thorough knowledge of theoretical principles as a foundation for subsequent practical achievement, which was always a noticeable feature of his career was first evidenced in the year's training which he secured in the Georgia Military Institute previous to his enlistment with the Nelson Rangers, an independent company of cavalry which volunteered for scout duty. Later he enlisted with the Confederate cavalry troops under General Forrest and subsequently with General Hood's cavalry.

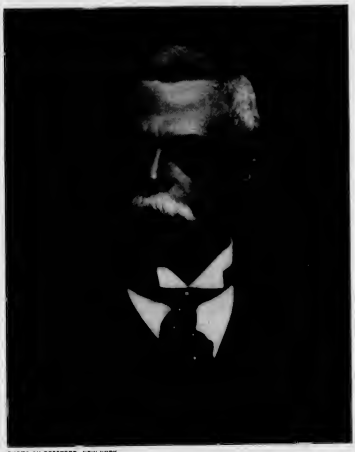

PHOTO BY GESSFORD, NEW YORK.

Samuel Spencer.

At the close of the war Samuel Spencer was still a youth, with the quest of a college training normally suggesting itself. Attracted by the lures of a civil engineering career Mr. Spencer entered the University of Georgia and graduated from that institution in 1867 at the head of his class. He supplemented this with two years in the University of Virginia, again finishing at the head. The first opportunity to apply his theoretical training presented itself in the offer of a job as rodman with the engineers in charge of the survey of the Memphis & Savannah Railroad. He outgrew that position within a week and was promoted to the position of leveller, and soon thereafter was made a transitman. His capacity for accepting increased responsibilities was recognized by his superiors and within two years he had served the company as resident engineer and had been promoted to first assistant engineer of the road. In this position he continued a year, from 1871 to 1872.

These three years of practical experience in field and office work in the engineering department of a railroad appear to have given him a grasp of more than the problems immediately involved. His observation of the general tendency towards great railroad development convinced him that he had discovered the field in which the greatest possibilities of the time lay. But he began to conclude that the men who were to direct that development were not to be those who confined their energies to the engineering task of extending the lines that were to be built. He perceived that the most direct path to a position in which he could secure a masterly participation in railroad development was through the operating department. That he gave the subject of his future career the careful thought and investigation which characterized all his work is indicated by his willingness to start again at the bottom in another department.

Mr. Spencer began his career in the operating department as a clerk in the office of the superintendent of the New Jersey Southern Railroad, remaining there until December of the same year, 1872, when he found an opening with the Baltimore & Ohio as assistant supervisor of trains on the first division. Within a few months he became supervisor of trains, a position which he held until 1877. During this period he acquired, through his duties and by continual study, a thorough grounding in railway operation. He left this position to become superintendent of transportation of the Virginia Midland, now part of the Southern system.

This position, held for nine months, served as a temporary stepping stone to the position of general superintendent of the Long Island Railroad, which he accepted when only 32 years of age. It is not too much to say that his ability in constructive administration was unusual and was so recognized. At this time he was attracting general attention. At the earnest solicitation of John W. Garrett, Mr. Spencer agreed to return to the Baltimore & Ohio, and in 1879 was made assistant to the president. His advances in the higher executive path of this road were rapid. In 1881 he was appointed acting general manager of the trans-Ohio division; two years later he was made third-vice-president; a year afterward second vice-president; in 1884 first vice-president and in 1887, at the age of 40, he succeeded Mr. Robert Garrett as president of the road. His elevation to the presidency followed a period of financial uncertainty in the road's history and by vigorous administration Mr. Spencer was able to make a record that secured for him a permanent place among the statesmen of the railroad world.

While charged with the administration of the Baltimore & Ohio affairs, Mr. Spencer, as stated in an article on the "Industrial Departments of Railways," in The Railway Age of July 14, 1905, perceived that the resources of the territory served would assist the fortunes of the property under his charge to the extent that they were systematically developed; and he concluded that if the territory of the road possessed a wealth of opportunity, which if improved would greatly augment traffic, it was the proper function of the company

SAMUEL SPENCER.

The public estimate of Samuel Spencer was assisted to definite formulation during the past eighteen months by recurrent indications of the clarity of his vision during the confusion of issues necessarily incident to the framing and enactment of an important law affecting the railroads and shippers of the country. And it is difficult to point to any public man in America, other than the president of the United States, whose sudden and tragic death would have caused greater concern than did the death of President Spencer, in a wreck of his own railroad. Mr. Spencer was a clear-headed, thorough student, not only of all railroad problems, but of all general industrial and economic conditions, particularly those affecting the south—to the upbuilding of which he gave his maturest energies in the same spirit in which he gave to that section of the country, in which he was born, his earliest patriotic allegiance.

He was born in Columbus, Ga., on March 2, 1847, the son of a prosperous storekeeper, in time to take a youthful but spirited part in the civil war. His apparent instinct for acquiring a systematic and thorough knowledge of theoretical principles as a foundation for subsequent practical achievement, which was always a noticeable feature of his career was first evidenced in the year's training which he secured in the Georgia Military Institute previous to his enlistment with the Nelson Rangers, an independent company of cavalry which volunteered for scout duty. Later he enlisted with the Confederate cavalry troops under General Forrest and subsequently with General Hood's cavalry.

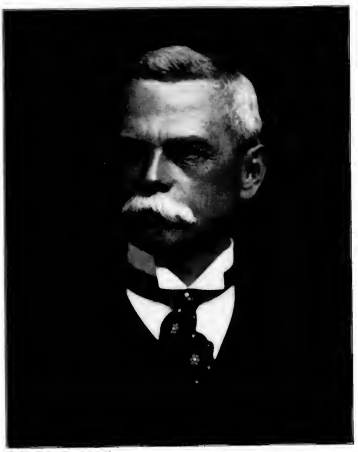

PHOTO BY GESSFORD, NEW YORK.

Samuel Spencer.

At the close of the war Samuel Spencer was still a youth, with the quest of a college training normally suggesting itself. Attracted by the lures of a civil engineering career Mr. Spencer entered the University of Georgia and graduated from that institution in 1867 at the head of his class. He supplemented this with two years in the University of Virginia, again finishing at the head. The first opportunity to apply his theoretical training presented itself in the offer of a job as rodman with the engineers in charge of the survey of the Memphis & Savannah Railroad. He outgrew that position within a week and was promoted to the position of leveller, and soon thereafter was made a transitman. His capacity for accepting increased responsibilities was recognized by his superiors and within two years he had served the company as resident engineer and had been promoted to first assistant engineer of the road. In this position he continued a year, from 1871 to 1872.

These three years of practical experience in field and office work in the engineering department of a railroad appear to have given him a grasp of more than the problems immediately involved. His observation of the general tendency towards great railroad development convinced him that he had discovered the field in which the greatest possibilities of the time lay. But he began to conclude that the men who were to direct that development were not to be those who confined their energies to the engineering task of extending the lines that were to be built. He perceived that the most direct path to a position in which he could secure a masterly participation in railroad development was through the operating department. That he gave the subject of his future career the careful thought and investigation which characterized all his work is indicated by his willingness to start again at the bottom in another department.

Mr. Spencer began his career in the operating department as a clerk in the office of the superintendent of the New Jersey Southern Railroad, remaining there until December of the same year, 1872, when he found an opening with the Baltimore & Ohio as assistant supervisor of trains on the first division. Within a few months he became supervisor of trains, a position which he held until 1877. During this period he acquired, through his duties and by continual study, a thorough grounding in railway operation. He left this position to become superintendent of transportation of the Virginia Midland, now part of the Southern system.

This position, held for nine months, served as a temporary stepping stone to the position of general superintendent of the Long Island Railroad, which he accepted when only 32 years of age. It is not too much to say that his ability in constructive administration was unusual and was so recognized. At this time he was attracting general attention. At the earnest solicitation of John W. Garrett, Mr. Spencer agreed to return to the Baltimore & Ohio, and in 1879 was made assistant to the president. His advances in the higher executive path of this road were rapid. In 1881 he was appointed acting general manager of the trans-Ohio division; two years later he was made third-vice-president; a year afterward second vice-president; in 1884 first vice-president and in 1887, at the age of 40, he succeeded Mr. Robert Garrett as president of the road. His elevation to the presidency followed a period of financial uncertainty in the road's history and by vigorous administration Mr. Spencer was able to make a record that secured for him a permanent place among the statesmen of the railroad world.

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o take the matters up with the investing public, rather than to leave them exclusively to the regular officials or chance investigator. The work was entrusted to Mr. M. V. Richards, who was then in the employ of the land department of a western railway, engaged in work of pushing the sales of the company's lands, and attracting immigration, the only kind of work which at that time approximated in any degree that then contemplated by Mr. Spencer. It happened, however, before the department was under way, that Mr. Spencer severed his connection with the Baltimore & Ohio, to take charge of railroad interests associated with the banking house of Drexel, Morgan & Co., now J. P. Morgan & Co. This prevented him from carrying out the plans he had entertained for the development of the Baltimore & Ohio, although the department he established was successfully continued.

It was in 1894, when various properties associated with the Richmond & West Point Terminal Railway & Warehouse Company were reorganized as the Southern Railway, that the resumption to Mr. Spencer's plan was made possible. As president of the Southern he later carried out in detail, through Mr. Richards, the plan which he had conceived, and this became the basis of the great land and industrial department by which the Southern has accomplished so much in the upbuilding of the south, and incidentally in increasing her own revenues.

Mr. Spencer's services were secured by the firm of Morgan & Co. in March, 1889, after his year of service as president of the Baltimore & Ohio. The firm had decided to enlist the services of an expert railroad executive, whose judgment in matters relating to railroad operation and management could be made available in the rehabilitation of various properties which that company had on its books. In this capacity of advisor and active reconstructor of properties which needed reorganization, Mr. Spencer added five years to his 22 years in railroad service. During this period he became president of the Elgin Joliet & Eastern, and brought the property up to a satisfactory condition.

In 1893 Mr. Spencer was appointed receiver of the Richmond & Danville and the East Tennessee Virginia & Georgia Railroads and undertook the task of reorganizing them and of welding them for operation as a single system, destined later to be included among the roads reorganized as the Southern Railway.

Mr. Spencer's services in behalf of these roads naturally led to his election, in June, 1894, as president of the Southern Railway system. During the twelve years in which he served as president of the Southern, the earnings of that system increased from $16,643,293 to $53,641,438, and the group of roads which he undertook to unify became a great system with a total mileage of 7,550 miles, exclusive of the Queen & Crescent system of 1,199 miles, of which Mr. Spencer became president in October, 1899. During this period probably no man has done more in the practical upbuilding of the south than did Mr. Spencer through the departments which he established for this purpose, and by individual inspiration.

In developing traffic for the Southern the efforts he inaugurated through his industrial department were based upon a recognition of the fact that the tendency of industries is to centralize at different points in class-related groups—as for example, cotton goods at Fall River, silk goods at Paterson, stoves at Detroit and Troy, gloves at Gloversville, shoes at Lynn, furniture at Grand Rapids, etc.—a tendency which he perceived did not necessarily imply favorable natural environment so much as other conditions artificially created To direct this tendency along the line of natural adaptability was the great object held in view by Mr. Spencer in undertaking the development of the south.

That his optimism was based upon his foresight as a pioneer, is apparent to any who know the conditions with which Mr. Spencer had to deal. That at the time of his death he had not made the Southern Railway into a system of such high standards as obtain in the more nearly subdued and commercialized sections of the country is merely that he did not accomplish the impossible in a given period. He did unquestionably lay the foundation in increased traffic for the earnings which will justify the gradual attempt to make the Southern a railroad property of the highest grade. His instinct and energy were constantly enlisted in the line of improvement, and there is little question that his ideas were frequently, if not generally, ahead of the practice of his time.

The esteem in which Mr. Spencer was held as a railroad man is well stated by Mr. W. J. Murphy, vice-president of the Queen & Crescent at Cincinnati, who said: "As a railroad man he was almost without a superior, and imagination could hardly construct a more ideal man for the position that he occupied. As a railroad official, as an operator and manager he was incomparable. His genius had much to do—perhaps more than any other factor—with the business success of the roads under his administration."

Mr. Spencer was a public-spirited man. He served the city of New York from 1891 to 1893 as a member of the Rapid Transit Commission. Although his duties as president of a great railroad system and his many personal interests made his moments of great value, Mr. Spencer devoted much time to the problems which came before the Rapid Transit Commission when he was a member, and the character of his disinterested services in behalf of the city are now recalled with appreciation.

In a minute which was adopted by a joint meeting of the trustees and the board of directors of the Southern Railway immediately following Mr. Spencer's funeral in Washington on December 2, attention was called to his last message to his friends in the south, at Montgomery, Ala., on October 25, which, it was declared in the minute "deserves wide circulation and close consideration." Extracts from this notable speech were published in The Railway Age of November 23. Of this speech the New York Sun said: "Where will you find the philosophy of rate legislation summed up with a more thorough understanding of all aspects of the question, or with a finer sense of the equities affecting the different interests involved, or with a nobler candor and clarity of statement than in the last public address of the president of the Southern, delivered at Montgomery for the instruction of the people of that part of the union, which he loved and served so well?"

Mr. Spencer was president also of the Georgia Southern & Florida and a director of the Chicago Milwaukee & St. Paul, the Central of Georgia, the Erie, the Old Dominion Steamship Company and the Western Union Telegraph Company.

Do We Need a Department of Mines?

An effort is being made to secure a department of mining, to have general supervision over mining statistics and the regulation of the mines of the United States, the metal mines as well as coal mines. The point is made that the mining industry has assumed such dimensions and is so important that it should be represented by something more than a bureau in the very miscellaneous assortment of government offices grouped in the department of the interior.

The mining industry is a very large and important factor in the business of the United States, and yet we do not quite see the necessity for a department of mines, with a cabinet office and the usual department organization. The regulation of mines is very largely a local matter, and practically every mining state in the Union, except Virginia and Texas, has suitable arrangements for securing the safety of mine workers and preserving the necessary statistics of the mining business within its borders. The United States geological survey collects and compiles the national figures in a satisfactory manner. It will be desirable to know the exact plan and scope of the proposed cabinet office before expressing approval of the new suggestion.—The Coal Trade Journal.

RAILWAY AGE DEC 7.06.

Pullman Rate Hearing in Texas.—At the hearing on the proposal to reduce Pullman rates in Texas, Commissioner Colquitt of the Texas commission read a letter from the secretary of state which set forth that the Pullman Company had not obtained a permit to do business in the state in accordance with the law, from which it was argued that the company could not lawfully transact any business in the state. The commission is not considering an order for the reduction of Pullman rates to be served directly upon the Pullman Company, but is considering an attack upon these rates by ordering the railroads to make the reduction. General Attorney Miller for the Missouri Kansas & Texas stated that the railroads would insist upon three points: That the commission had no authority to require the railroads to transport sleeping cars, that, if in any conceivable way such authority should exist, the supreme court of the state has decided in a controversy between the state and railroads that the contracts between the railroads and the Pullman Company, which are exclusive and have many years to run, are valid, and that therefore the railroad companies are powerless and must obey the contracts.

Representatives of the passenger departments of the Missouri Kansas & Texas, Southern Pacific and Frisco gave testimony to the excellence of the Pullman service and the inability of the roads to conduct economically a similar service.

RAILROAD GAZETTE DEC 1.06

At Greensburg, Pa., the Pullman Company has been fined $50 and costs on each of six indictments for furnishing in its cars adulterated milk, though the court ruled that the adulteration was not done by the company.

The Tonopah & Goldfield has ordered 100 gondola cars from the Pullman Company.

RAILWAY AGE DEC 14.06.

Impetus will be given to the tendency toward increase of corporation taxation by the decision of the United States supreme court establishing the doctrine that a state may exact annual payments of its corporations measured by a per cent of the capital stock; such payments being declared to constitute not a privilege or license fee, but a tax, entitled to priority and enforcible the same as a tax on real estate or personal property. The state of New Jersey, under whose franchise tax law its entire expenses of government are met by the fees collected from corporations, sued the bankrupt Cosmopolitan Power company for license fees due for previous years. The trustee resisted the claim, contending that it was an ordinary debt and not a tax entitled to priority, and the federal district court at Chicago and the circuit court of appeals in turn sustained this contention; but the supreme court, three justices dissenting, has reversed all the lower courts and held that the license fee is a tax. The decision is of great importance both as strengthening the existing franchise tax laws in several states, and as indicating limitless opportunity for increasing the revenue from corporations in all states.

Baltimore & Ohio has placed a contract with the Pullman Company for three new parlor cafe cars, as reported last week. These cars have been ordered for delivery early in 1907 and will be of standard Baltimore & Ohio design, of composite wood and steel, with anti-telescoping ends and vestibules. They will be 81 feet long and with six-wheel trucks. The parlor compartment will have seating capacity for 16 persons, the dining room will accommodate 12 and the smoking section 5 persons.

Colorado & Southern has ordered 2,200 box cars from the Pullman Company and is reported to have placed orders for 1,300 additional cars.

United Verde & Pacific has ordered 20 flat cars of 40,000 pounds capacity from the Pullman Company.

Chicago Burlington & Quincy has ordered four dining cars from the Pullman Company.

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The New President of the Southern.

William Wilson Finley, the new President of the Southern Railway, has had the valuable experience of a training on roads operating under widely differing conditions. He has seen railroad service in the middle South, the Southwest and the Northwest, and has had the past 10 years to apply the knowledge gained in other parts of the country to conditions on the Southern Railway. Mr. Finley was born in Mississippi in 1853, and began railroad work when he was 20 years old as a stenographer on the New Orleans, Jackson & Great Northern, now part of the Illinois Central. During the next 10 years he worked his way up on different southern roads until he was appointed Assistant General Freight Agent of the Texas & Pacific. Mr. Finley retained his position when the road was thrown into a receivership two years later, and was made General Freight Agent in 1886. In 1888 he was appointed General Freight Agent of the Fort Worth & Denver City and other roads comprising the "Panhandle Route," which has since been taken over by the Colorado & Southern. The next year he was made Chairman of the Trans-Missouri Traffic Association, and in 1890 was appointed Chairman of the Western Passenger Association. He spent the next three years as General Traffic Manager of the Great Northern, and then went to the Southern as Third Vice-President. Early in 1896 he returned to the Great Northern as Second Vice-President, but remained there only four months before going back to the Southern as Second Vice-President, where he has been since.

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The Harriman Lines have ordered five dining cars for the Southern Pacific, two dining cars for the Louisiana Western, one dining car for Morgan's Louisiana & Texas, and one dining car for the Texas & New Orleans from the Pullman Co.

The Chicago, Rock Island & Pacific is asking bids on 103 box cars of 80,000 lbs. capacity, 35 coal cars of 100,000 lbs. capacity, 18 stock cars of 80,000 lbs. capacity, three furniture cars of 60,000 lbs. capacity, and three flat cars of 100,000 lbs. capacity.

The Wabash, as reported in our issue of November 16, has ordered 2,000 steel hopper cars from the Standard Steel Car Co., 2,000 steel hopper cars from the Cambria Steel Co., 1,000 wooden box cars from the American Car & Foundry Co. and 1,000 wooden box cars from the Pullman Co.

RAILWAY REVIEW DEC 15.06.

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RAILROAD GAZETTE
DEC 21. 06.

Robert E. Slagle, for the past three years assistant district superintendent of the Pullman Company at Kansas City, Mo., has gone, as half owner, to the Acme Supply Co., 100 Lake street, Chicago.

The Chicago Great Western has ordered 300 box cars of 70,000 lbs. capacity from the Pullman Company. These cars will weigh 36,000 lbs. and will measure 36 ft. long, 8 ft. 6 in. wide and 8 ft. high, all inside measurements. The special equipment includes:

Brakes	Westinghouse
Couplers	Janney
Doors	Security
Roofs	Chicago
Trucks	Barber
Wheels	Griffin

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napolis to the Pacific coast shorter than any existing transcontinental railway and with lower grades and less curvature. Its cost and capitalization will also be much less than those of any other line to the coast."

Three years later, in reporting to his stockholders, Mr. Hill announced that the completion of the Pacific coast extension practically finished the work of construction for the company except so far as greater development of local territory served by the lines might demand the building of some local branches. When this statement was made no prophet could foresee the wonderful development which recent years have brought throughout the northwest. Mr. Hill now controls three systems of exceptional credit and is already planning a new line to be built on the Canadian side of the border from Winnipeg to the Pacific coast. It will be of extraordinary interest to know what other important plans are entertained for the Hill lines, that is to say, how the new capital derived from the sale of new stock is to be applied.

AN OLD-FASHIONED IDEA.

Certain members of congress in their wisdom have observed the relations between railway trainmen and their employers and have concluded that they can be improved, and they propose to improve them by statute. Something in this direction was accomplished by the employers' liability act of the last session, but the chief proposal in the programme of paternalism is the so-called 16-hour bill introduced in the senate by Mr. La Follette and in the house by Mr. Esch. This bill proposes to make it unlawful for any employe of any interstate railway to work, in any capacity connected with or affecting interstate commerce, for more than 16 consecutive hours or to resume work after stopping until he has been off duty for fully 10 hours. The proposed penalty for violation of this rule is a fine of not more than $1,000, but applies only to the employer, even though the violation may have been induced by misrepresentations on the part of the employe to the effect that he had not worked as long as was actually the case. Exceptions, it is proposed, shall be allowed only in the case of unforeseen casualties occurring after the employe affected has left the terminal and started on the run which thus may exceed 16 hours without bringing the penalty.

Probably few measures could be more to the liking of those who believe that the folly of those who are prone to overwork ought to be restrained by a paternal government whose wisdom need not falter in the task of prescribing contracts between grown men who call- themselves free. "Eight hours for labor, eight hours for recreation and eight hours for slumber," expresses, as is well known, the very climax of industrial wisdom as it is found in the majority, and why should the railway industry lag behind the building trades in its practical application? Of course, it is true that there are many industries in which the eight-hour day is out of the question, as, for example, the agricultural and shipping industries. It is equally true that in a week or a month or a year the average railway trainman does not work a notably large proportion of the total number of hours. But the fact that, under freedom of contract, the railway trainmen and the railway managers have together yielded to the exigent demand for the prompt and effective performance of the quasi-public services for which railways exist, so far as to agree upon more hours of continuous labor than the true paternalist can ever approve, is, to the latter, a sufficient reason for assuming control of the contract. The fact that in doing so the government will bring about a serious interruption of the transportation business, already dangerously congested in several regions, does not appear as an even moderately deterrent force. The triumphal march of paternalism must not be stopped, even though the grain rots in the elevators or the furnace fires die out for lack of coal or ore.

To those confident paternalists who accept the arguments suggested above and are ever ready to act upon them, the recent action of Division No. 156 of the Order of Railway Conductors, as reported in The Railway Age of last week, must have come as a shock. Naturally they expected opposition from those wicked corporations who count the performance of the services for which they have been created as of greater consequence than the satisfaction of the demands of professional labor agitators and their ignorant sympathizers, but they were so sure that in subtracting from the freedom of contract of the trainmen they were acting for the good of those whose liberty they sought to impair, that they expected, from the latter, nothing but gratitude and acquiescence.

But these rude and inconsiderate trainmen, self-confident and reliant in an unexpected degree, hold to a different, although an old-fashioned, idea. So Division No. 156 met and passed a preamble and resolutions expressly and thoroughly condemning the La Follette bill and all similar measures and protesting against the enactment of any of them. Included in the preamble was this strangely reminiscent declaration, which we have already quoted, but which will bear repetition:

> Whereas the railway trainmen of the United States are of full age, possessed of sound mind, equipped with an intelligent comprehension of their own interests and of the business in which they are engaged and are therefore fully able to look after themselves in their dealings with their employers, now, therefore. . . . "

There was a time in the history of the American republic when such expressions as the foregoing were the common product of an insistent demand for individual freedom which brooked only the most limited and clearly justifiable interference on the part of government. But then the American people had so lately experienced the hardships of tyrannous interference by princes that they were ready to accept the teaching of Thomas Jefferson, when he proclaimed that the government is best which governs least. The generations which have succeeded are, perhaps, so familiar with the principle and exercise of freedom that they do not properly value the items in the grand sum-total of their liberty. And they have yet, most of them, to learn the great truth, that a government by the majority can become as tyrannous, and as ruthless in its tyranny, as that of the most absolute of monarchs. Yet the adoption of such resolutions as those quoted shows that when the particular liberties of any group of American workmen are sought to be invaded by statute, they will know how to resent the impertinence.

An Electric Line in Switzerland.

The La Gruyere electric railroad has been recently laid out through a picturesque region of Switzerland not far from Lake Leman, and has already a large tourist traffic. Several years ago two companies obtained concessions for railroads, one running from Chatel Saint Denis to Paleyieux, and a second from the former point to Bulle and Monthovon. These companies were consolidated, and the electric equipment of the system, which makes a single continuous line, was carried out by the Alioth company, of Bale. The total length of the three sections of the road is 28 miles, and the road uses Vignole rails, weighing 53 pounds per yard, except within some of the towns, where a groove rail is employed. Motor cars of some length, either separate or coupled together to form a train, are used in this case, and the current is taken by overhead trolley from a suspended wire. A single wood pole, with a long bracket arm reaching clear across the track, supports the wire, and the trolley, mounted on the car roof, is of the arched or bow form.—Electrical Review.

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STATISTICS OF CARS AND LOCOMOTIVES ORDERED IN 1906.

We submit herewith our annual compilation of car and locomotive statistics covering the orders placed for freight cars, passenger cars and locomotives by the railways of the United States, Canada and Mexico during the year just closing. It will be well for the reader to bear constantly in mind that these statistics, as well as those of the same purport published in the five years previous, cover orders placed for equipment, and not new equipment delivered by the builders. They also embrace the requisitions made upon their own shops by railways, private car lines and other users of equipment. The figures, imposing and impressive as they are in extent, may be relied upon. They are, we believe, as nearly accurate as such statistics can be made in the short time available for their compilation. The tables which follow are made up from our weekly records, supplemented by official returns from the railway companies, as well as returns from many of the builders. Each of these sources of information is checked against the others, and the result constitutes an unusually accurate and comprehensive detailed list showing the equipment requisitions of each road or owner.

The orders for equipment placed during 1906 are not quite as large in volume as those for 1905. During the previous year the number of freight cars ordered reached the startling total of 341,315 cars. This year the returns show a total of about 30,000 cars less, but the large number of cars ordered during the last three months of 1905 resulted in an extremely congested condition for the builders, out of which they were about nine months in extricating themselves. That is to say, that the equipment manufacturers during the year 1906 were engaged most of the time in filling orders placed during the year 1905. The returns for the last six years during which we have compiled these figures are summarized below:

	1901.	1902.	1903.	1904.	1905.	1906.
Locomotives	4,340	4,665	3,283	2,538	6,265	5,642
Passenger cars....	2,879	3,459	2,310	2,213	3,289	3,402
Freight cars 193,439		196,248	108,936	136,561	341,315	310,805

It will be noted that the number of passenger cars ordered is larger than that of last year, and the largest for any year since 1902, when extensive orders for passenger car equipment were placed in anticipation of traffic during the St. Louis World's Fair. Considering the very large number of locomotives ordered in 1905, in comparison with 1903 and 1904, and the fact that most of the railways were and are relatively much better supplied with power than with freight car equipment, the total of 5,642 locomotives ordered during 1906 is both creditable and promising.

FREIGHT CARS ORDERED IN 1906.

*Asterisk indicates steel or steel underframe cars.

Purchaser.	No.	Kind.	Capacity.	Builder.
Ala. & Fla. Lbr. Co.	2	Log	.....	Amer. C. & F. Co.
Ala. & Vicksburg.	164	Box	60,000	Amer. C. & F. Co.
	9	Flat	80,000	Amer. C. & F. Co.
	50	Hart Conv.	80,000	Rodger Ballast.
Alabama Gt. So..	250	Flat	80,000	Western Steel.
	250	Coke	60,000	Western Steel.
	250	Gondola	80,000	Pullman.
	500	Box	60,000	Pullman.
	*250	Hopper	100,000	Pressed Steel.
	500	Box	60,000	Amer. C. & F. Co.
Alan Wd I. & S. C.	*8	Gondola	100,000	Middletown.
Allis-Chalmers Co.	2	Flat	200,000	C. M. & St. P. Shops.
American Cond. Co.	2	Tank	10,000 g.	Amer. C. & F. Co.
Amer.Refrig. Tr. Co.	50	Refrig	60,000	Co. Shops.
	1,500	Refrig	60,000	Amer. C. & F. Co.
Am. Sm. & Ref. Co.	*19	Ore	40,000	Wonham-Magor.
	8	Gondola	80,000	Treadwell.
	6	Gondola	60,000	Treadwell.
	3	Flat	80,000	Hicks L. & C. Wks.
	6	Box	30,000	Middletown.
	4	Gondola	60,000	Western Steel.
	*4	Ore	100,000	Pressed Steel.
	4	Flat	40,000	Wonham-Magor.
	5	Gondola	60,000	Wonham-Magor.
	*6	Gondola	30,000	Wonham-Magor.
	*15	Ingotdsby	80,000	Ingoldsby.
	*6	Ore	100,000	American C. F. Co.
Am. Sm. Secur. Co.	6	Hopper	.....	Amer. C. & F. Co.
Am. St. & W. Co.	*100	Gondola	100,000	Middletown.
Anderson Bros....	4	Log	50,000	Orange Iron Wks.
Ann Arbor.....	26	Box	80,000	Co. Shops.
	5	Caboose	.....	Co. Shops.
	2	Barrel	.....	Amer. C. & F. Co.
Anheuser-Busch..	1	Caboose	.....	Hicks L. & C. Wks.
Arizona Southern.	25	Otis	80,000	National Dump.
Arkansas Valley..	1	Fruit	.....	Co. Shops.
	50	Tank	.....	Co. Shops.
Armstrong E. E..	1	Refrigerator	60,000	Rhodes Curry.
Anglo-Nfld. Dev. Co.	7	Flat	40,000	Rhodes Curry.
Armst'g L. W. & P.	*10	Box	.....	Amer. C. & F. Co.
A. T. & S. F. Ry.	*2,000	Box	70,000	Amer. C. & F. Co.
	*245	Flat	80,000	Pressed Steel.
	13	Caboose	.....	American C. & F. Co.
	*100	Tank	100,000	Pressed Steel.
	*500	Hart	100,000	Rodger Ballast.
	100	Refrig.	60,000	Amer. C. & F. Co.
	*200	Tank	80,000	Amer. C. & F. Co.
	20	Cabooses	.....	Amer. C. & F. Co.
	*2,500	Box	70,000	Standard.
	*1,600	Gondola	100,000	Natl. Dump.
	*400	Hart	100,000	Natl. Dump.
	*600	Coke & Stock	80,000	Natl. Dump.
	500	Refrig.	60,000	Natl. Dump.
	100	Caboose	.....	Amer. C. & F. Co.
	1	Exp. Box	.....	Amer. C. & F. Co.
Atl. & West Point.	55	Box	60,000	Co. Shops.
	50	Coal	80,000	Co. Shops.
	50	Flat	80,000	Co. Shops.
	25	Furniture	60,000	Co. Shops.
Atl. Birm. & Atlc.	1,100	Box	.....	South Atlantic.
	300	Coal	80,000	So. Atlantic.
	300	Flat	.....	South Atlantic.
Atlantic Coast L.	2,000	Box	60,000	So. Baltimore.
	500	Flat	60,000	So. Atlantic.
Atlantic Coast L.	500	Coal	80,000	Barney & Smith.
	60	Hart	.....	Rodger Ballast.
	500	Flat	.....	Standard.
	500	Box	60,000	Standard.
	*75	Phosphate	.....	Middletown.
Atlantic Eq. Co..	12	Hopper	80,000	Middletown.
Atlc. Que. & West.	10	Hart	80,000	Dominion Dump.
Au Sable & N.W.	25	Flat	50,000	Au Sable Car Works.
Bakersfield & Yen.	20	Flat	60,000	Hicks L. & C. Wks.
Bangor & Aroos..	25	Flat Bodies	.....	Amer. C. & F. Co.
	*225	Flat	60,000	Amer. C. & F. Co.
	*1,228	Box	60,000	Amer. C. & F. Co.
	40	Stock	.....	Amer. C. & F. Co.
	6	Caboose	.....	Amer. C. & F. Co.
Barrett Mfg. Co..	*90	Tank	10,000 g.	Amer. C. & F. Co.
Bayde Noquet Lr.Co.	6	Log	60,000	Co. Shops.
Beaum. Saw Mill..	15	Logging	.....	Beaumont I. Wks.
Benson Lg. & Lr.Co.	*2	Tank	10,000 g.	Bettendorf.
Bering Mfg. Co...	25	Log	.....	Marshall Car Wheel.
Bess. & Lake Erie.	500	Gondola	100,000	Pressed Steel.
	500	Hopper	100,000	Standard Steel.
Bethlehem Steel Co.	1	Tank	.....	Amer. C. & F. Co.
Birmingham So...	*75	Hopper	100,000	Pressed Steel.
	*12	Hopper	100,000	Pressed Steel.
	*10	Flat	150,000	Pressed Steel.
Boomer C.&C.Co.	*1,000	Gondola	100,000	Raiston.
Boston & Maine..	1,000	Box	60,000	Laconia.
	500	Box	60,000	Western Steel.
	500	Box	60,000	Pullman.
	12	Caboose	.....	Laconia.
	1	Sample Box	60,000	Co. Shops.
	6	Caboose	.....	Co. Shops.
	1,000	Box	.....	Pullman.
Bowman Hicks Co.	12	Logging	.....	Beaumont I. Wks.
Boyne Cy. Gay.&Alp.	70	Flat	60,000	Amer. C. & F. Co.
Brimstone R. R. & Canal Co.	26	Hopper	100,000	Pressed Steel.
Bh.Cn.Mills'r.&T.Co.	6	Flat	60,000	Crossen.
Brookville & Mahoning	500	Coal	100,000	Barney & Smith.
Buckley, L. J. Co.	10	Ballast	100,000	Fitz-Hugh, Luther.
Buffalo & Susq...	500	Gondola	100,000	Pressed Steel.
Buff. Rch.&Pitts.	*1,000	Hopper	100,000	Standard.
	500	Box	60,000	Amer. C. & F. Co.
Butler Bros. & Hoff.	20	Flat	50,000	Fitz-Hugh, Luther.
Butler Lbr. Co....	12	Flat	60,000	Hicks L. & C. Wks.
Butte Ana. & Pac.	*75	Hopper	100,000	Standard.
Camp & Hinton..	50	Flat	.....	Amer. C. & F. Co.
Campbell Lbr. Co...	6	Flat	50,000	Rhodes, Curry.
Can. Iron & Fy. Co.	3	Flat	80,000	Rhodes, Curry.
Canadian North..	20	Hart	80,000	Dominion Dump.
	21	Refrig.	60,000	Rhodes, Curry.
	250	Box	60,000	Rhodes, Curry.
	1,500	Box	60,000	Rhodes, Curry.
	200	Box	60,000	Canada Car.
	200	Hart	80,000	Dominion Dump.
	100	Flat	60,000	Rhodes, Curry.
	100	Box	60,000	Crossen.
	200	Stock	60,000	Crossen.
	100	Flat	60,000	Crossen.
	15	Cabooses	.....	Crossen.
Canadian Pacific.	8,619	Box	60,000	Co. Shops.
	91	Stock	60,000	Co. Shops.
	940	Flat	60,000	Co. Shops.

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RAILROAD GAZETTE
DEC 21 06

Robert E. Slagle, for the past three years assistant district superintendent of the Pullman Company at Kansas City, Mo., has gone, as half owner, to the Acme Supply Co., 100 Lake street, Chicago.

The Chicago Great Western has ordered 300 box cars of 70,000 lbs. capacity from the Pullman Company. These cars will weigh 36,000 lbs. and will measure 36 ft. long, 8 ft. 6 in. wide and 8 ft. high, all inside measurements. The special equipment includes:

Brakes	Westinghouse
Couplers	Janney
Doors	Security
Roofs	Chicago
Trucks	Barber
Wheels	Griffin

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FREIGHT CARS ORDERED IN 1906—Continued.

*Asterisk indicates steel or steel underframe cars.

Purchaser.	No.	Kind.	Capacity.	Builder.
Canadian Pacific..	500	Coal	100,000	Dominion S. C. Co.
	22	Coal	80,000	Co. Shops.
	241	Ballast		Co. Shops.
	65	Ore	80,000	Dominion S. C. Co.
	101	Van		Co. Shops.
	254	Hart	80,000	Dominion Dump.
Cananea Con. Copper Co.	*12	Ingoldsby	50,000	Barney & Smith.
	12	Ingoldsby		Ingoldsby.
	*3	Flat	60,000	Co.'s Shops.
	*2	Box	60,000	Co. Shops.
	1	Powder	60,000	Co. Shops.
Cananea Y. R. & Pac.	*50	Box	100,000	Pressed Steel.
	*50	Flat	100,000	Standard.
	*100	Hart	100,000	Rodger Ballast.
	4	Caboose		Pullman.
Carter Lumb. Co.	4	Log		Amer. C. & F. Co.
Cent. Ir. & St. Co.	*6	Flat	100,000	Middletown.
Cent. of Arkansas	10	Flat	50,000	Hicks L. & C. Wks.
	5	Box	60,000	Hicks L. & C. Wks.
Cent. of Georgia..	*1,000	Hopper	100,000	Pressed Steel.
	1,000	Box	60,000	So. Atlantic.
Central Ontario..	10	Hart	80,000	Dominion Dump Car.
	20	Box	60,000	Canada Car.
Central Pacific...	*500	Box	100,000	Pressed Steel.
	*300	Flat	100,000	Standard.
	*400	Hopper	100,000	Cambria.
Cent. of New J..	1,000	Box	60,000	Standard.
Central Vermont.	27	Flat	60,000	Co.'s Shops.
	6	Box	60,000	Co.'s Shops.
	6	Vans		Co.'s Shops.
	20	Refrig.	60,000	Co.'s Shops.
	10	Tank		Amer. C. & F. Co.
Chanute Ref. Co..				
Charlotte Harb. & Northern	20	Flat		Georgia.
	20	Vent. Box	60,000	So. Atlantic.
	30	Phosphate	60,000	
Ches. & Ohio....	468	Box	80,000	Amer. C. & F. Co.
	80	Stock	80,000	Amer. C. & F. Co.
	148	Flat	80,000	Amer. C. & F. Co.
	*2,000	Gondola	100,000	Amer. C. & F. Co.
	*1,000	Hopper	100,000	Amer. C. & F. Co.
	*2,000	Gondola	100,000	Western Steel.
	*1,000	Hopper	100,000	Standard Steel.
	*499	Hopper	100,000	Standard.
	*496	Gondola	100,000	Amer. C. & F. Co.
	*1,000	Gondola	100,000	Pressed Steel.
Chesterf. & Lanc.	6	Flat	50,000	Georgia.
Chicago & Alton.	200	Refrig.	80,000	Amer. C. & F. Co.
	1,300	Box	80,000	Amer. C. & F. Co.
	300	Stock	60,000	Amer. C. & F. Co.
	300	Flat	80,000	Amer. C. & F. Co.
	100	Furniture	80,000	Amer. C. & F. Co.
Chi. & E. Ill.....	20	Box	60,000	Amer. C. & F. Co.
	6	Box	80,000	Amer. C. & F. Co.
	12	Coal	80,000	Amer. C. & F. Co.
	*3	Coal	100,000	Amer. C. & F. Co.
	1	Dump	80,000	National Dump.
	25	Cabooses		Mt. Vernon.
Chi. & Ill. Mid....	240	Gondola	60,000	Hicks L. & C. Wks.
Chicago & N. W.	700	Box	80,000	Pullman.
	500	Flat	80,000	Pullman.
	600	Stock	60,000	Pullman.
	300	Gondola	80,000	Pullman.
	25	Caboose		Pullman.
	1,000	Box	80,000	Haskell & Barker.
	400	Ore	80,000	Haskell & Barker.
	1,500	Box	80,000	Amer. C. & F. Co.
	300	Flat	80,000	Amer. C. & F. Co.
	700	Gondola	80,000	Amer. C. & F. Co.
	2,000	Box	80,000	Haskell & Barker.
	300	Stock	60,000	Haskell & Barker.
Chi. Burl. & Quincy	*6	Tank	100,000	American C. & F. Co.
	1,900	Box	80,000	Pullman Co.
	*100	Box	80,000	Standard.
	500	Stock	40,000	Co.'s shops.
	*2	Gondola	100,000	Standard.
Chicago Gt. West.	220	Stock	60,000	Hicks L. & C. Wks.
	280	Box	70,000	Pullman.
	100	Furniture	70,000	Pullman.
	12	Caboose		Amer. C. & F. Co.
	200	Box	60,000	Co.'s Shops.
	300	Box	60,000	Pullman.
Chi. Ind. & So...	*1,000	Box	80,000	Pullman.
	*300	Flat	80,000	Amer. C. & F. Co.
	*100	Hop. Gond.	100,000	Standard.
	*2,000	Hopper	100,000	Standard.
	*150	Hart	100,000	Rodger Ballast.
	15	Caboose		L. S. Shops.
Chicago Junction.	50	Gondola	80,000	Haskell & Barker.
Chi. L. S. & East.	*350	Dump	100,000	Amer. C. & F. Co.
	*500	Gondola	100,000	Amer C. & F. Co.
	*100	Flat	100,000	Amer. C. & F. Co.
Chi Mil. & St. P.	200	Refrig.	60,000	Co.'s Shops.
	200	Vent. Box	60,000	Co.'s Shops.
	30	Cabooses		Co.'s Shops.
	20	Drovers		Co.'s Shops.
	4	Water		Co.'s Shops.
	*1,000	Flat	100,000	Standard.
	250	Ore	120,000	Co.'s Shops.
	300	Flat	60,000	Co.'s Shops.
	1,000	Stock	80,000	Co.'s Shops.
	3,000	Box	80,000	Co.'s Shops.
	1,000	Ballast	80,000	Co.'s Shops.
	700	Coal	100,000	Co.'s Shops.
	206	Cinder	40,000	Co.'s Shops.
	6	Flat	100,000	Co.'s Shops.
	4	Flat	200,000	Co.'s Shops.
	25	Cabooses		Co.'s Shops.

Purchaser.	No.	Kind.	Capacity.	Builder.
Chi. Mil. & St. P.	*1,000	Box	80,000	Co.'s Shops.
C. R. I. & Pac...	400	Furniture	60,000	Amer. C. & F. Co.
	*250	Stock	80,000	Amer. C. & F. Co.
	*250	Hopper	100,000	Amer. C. & F. Co.
	*2,000	Box	80,000	Amer. C. & F. Co.
	*300	Flat	100,000	Amer. C. & F. Co.
	50	Cabooses		Amer. C. & F. Co.
	*1,650	Dump	100,000	National Dump.
	350	Hart Convert..	80,000	Rodger Ballast.
Chi. St. P. M. & O.	10	Cabooses		Co.'s Shops.
Chi. Short Line...	1	Caboose		Amer. C. & F. Co.
Chihuahua & Pac.	2	Cabooses		Barney & Smith.
	20	Box	60,000	Barney & Smith.
	2	Caboose		Mt. Vernon.
	30	Box		Mt. Vernon.
C. N. O. & Tex. Pac.	19	Flat		Co.'s Shops.
	250	Flat	80,000	Western Steel.
	250	Coke	60,000	Western Steel.
	250	Gondola	80,000	Pullman.
	1,000	Box	60,000	Mt. Vernon.
	1,250	Hopper	60,000	Barney & Smith.
	40	Hart		Rodger Ballast.
	1	Plow		Rodger Ballast.
Clev. Akron & Col.	*270	Box	100,000	Pressed Steel.
	*76	Flat	100,000	Pressed Steel.
	*200	Gondola	100,000	Pressed Steel.
	*70	Stock	100,000	Pressed Steel.
C. C. C. & St. L..	*250	Flat	80,000	Amer. C. & F. Co.
	*250	Hopper	100,000	Standard.
	*500	Hop. Gond.	100,000	Barney & Smith.
	*100	Hart	100,000	Rodger Ballast.
	25	Caboose		Amer. C. & F. Co.
	25	Caboose		Co.'s Shops.
Cleve. Stone Co..	10	Flat	80,000	Haskell & Barker.
Coahuila & Zaca.	10	Gondola	55,000	Kilbourne & Jacobs.
	20	Gondola	55,000	Mt. Vernon.
	10	Box	55,000	Mt. Vernon.
Coal & Coke.....	500	Coal		So. Baltimore.
Colonial Lbr. & Timber Co.	5	Log		Amer. C. & F. Co.
Colo. & Southern.	161	Ingoldsby		Pullman.
	150	Hart Convert.		Rodger Ballast.
	9	Box		Amer. C. & F. Co.
	1	Stock		Amer. C. & F. Co.
	300	Box		Pullman.
Colo. So. N. O. & Pac.	*500	Box	80,000	Amer. C. & F. Co.
	*250	Flat	80,000	Amer. C. & F. Co.
	*150	Hart	100,000	Rodger Ballast.
	50	Hart	80,000	Rodger Ballast.
	*75	Oil Tank	10,500 g.	Amer. C. & F. Co.
	100	Log	60,000	Co.'s Shops.
	100	Log	80,000	Co.'s Shops.
	20	Caboose		Amer. C. & F. Co.
Col'bia Creo. Co.	5	Tank		Amer. C. & F. Co.
Columbia Lbr. Co.	6	Log		Amer. C. & F. Co.
Conners Bros. Lbr. Co.	4	Log		Amer. C. & F. Co.
Consol. Lbr. Co..	30	Log	80,000	Russell Co.
Cont. Mining Co..	30	Dump		Amer. C. & F. Co.
	5	Flat		Amer. C. & F. Co.
	3	Box		Amer. C. & F. Co.
Copper Range....	*10	Mineral	100,000	Pressed Steel.
	25	Ore		Amer. C. & F. Co.
	15	Gondola		Amer. C. & F. Co.
	2	Caboose		Amer. C. & F. Co.
	8	Hopper	60,000	Treadwell.
	25	Gondola	100,000	Pressed Steel.
Cornwall on Bank	4	Dump	20,000	Treadwell.
Cornwall R. R...	*25	Gondola	100,000	Pressed Steel.
Creso, Tank Co..	*20	Tank	6,600 g.	Bettendorf Co.
Crowell & Spencer Lbr. Co.	1	Caboose		Amer. C. & F. Co.
Cumb. Valley	15	Box	100,000	Pa. Shops.
	48	Box	100,000	Middletown.
Daniels Archer Linseed Co.	*5	Tank	10,000 g.	Amer. C. & F. Co.
	*10	Tank		Amer. C. & F. Co.
	5	Tank	8,000 g.	Wm. Bros. B. & M. Co.
Daugherty Ref. Co.	5	Tank		Amer. C. & F. Co.
Davis, M. L.....	15	Log		Amer. C. & F. Co.
Decatur Lbr. Co..	3	Log		Amer. C. & F. Co.
Deepwater	600	Stock	80,000	Amer. C. & F. Co.
	100	Box		Amer. C. & F. Co.
	1	Caboose		Barney & Smith.
Dela. & Hud. Co..	1,500	Hopper	85,000	Amer. C. & F. Co.
	1,400	Box	60,000	Amer. C. & F. Co.
	100	Automobile	60,000	Amer. C. & F. Co.
	500	Flat	85,000	Amer. C. & F. Co.
	100	Stock	60,000	Amer. C. & F. Co.
	20	Ref.	60,000	Amer. C. & F. Co.
	100	Produce	60,000	Amer. C. & F. Co.
	1,000	Flat	85,000	Amer. C. & F. Co.
	1,500	Hopper	85,000	Amer. C. & F. Co.
	1,500	Box	80,000	Amer. C. & F. Co.
	2,500	Flat and Coal..	80,000	Amer. C. & F. Co.
Del. Lack. & West.	250	Gondola	80,000	Pressed Steel.
	*500	Hoppers	80,000	Pressed Steel.
	100	Automobile	60,000	Co.'s Shops.
	300	Box	60,000	Co.'s Shops.
	200	Stock	60,000	Co.'s Shops.
	1,000	Box	80,000	Co.'s Shops.
	*1,600	Box		Co.'s Shops.
Denv. & Inter. Mt.	10	Gondola	80,000	Fitz-Hugh Luther.
Denver & R. G..	100	Flat	80,000	Co.'s Shops.
	500	Dump	80,000	National Dump.
	500	Gondola	80,000	Amer. C. & F. Co.
Denv. N. W. & Pac.	50	Flat	60,000	Pullman.

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FREIGHT CARS ORDERED IN 1906—Continued.

*Asterisk indicates steel or steel underframe cars.

Purchaser.	No.	Kind.	Capacity.	Builder.
Den. N. W. & P..	75	Box	60,000	Pullman.
	75	Stock	60,000	Pullman.
	3	Cabooses		Barney & Smith.
Des Moines Iowa Falls & No.	3	Hart		Rodger Ballast.
Des Peres Valley.	3	Flat		Amer. C. & F. Co.
Dominion Atlantic	25	Flat	60,000	Rhodes, Curry.
	1	Caboose		Rhodes, Curry.
Dominion Iron & Steel Co.	20	Hopper	60,000	Rhodes, Curry.
Dom. Tar & Chem. Co.	1	Tank		Amer. C. & F. Co.
Donaldson Lbr. Co.	6	Log		Amer. C. & F. Co.
Dul. & Iron Range	*700	Ore	100,000	Pressed Steel.
	20	Box	60,000	Western Steel.
	*80	Flat	60,000	Western Steel.
	*15	Gondola	100,000	Pressed Steel.
	10	Ref.	60,000	Amer. C. & F. Co.
	50	Flat	80,000	Amer. C. & F. Co.
Duluth & N. E..	10	Log	50,000	Co.'s Shops.
Duluth & North. Minn.	100	Ore	100,000	Pressed.
Dul. Miss. & No.	*1,150	Ore	100,000	Standard.
	*600	Ore	100,000	Standard.
	100	Box	80,000	Standard.
	25	Refrigerator	60,000	Standard.
	59	Hart	100,000	Rodger Ballast.
	15	Ore		Co.'s shops.
Dul. R. L. & Winn.	75	Log		Russell.
	100	Flat	80,000	Fitz-Hugh Luther.
	4	Gooseneck		Mt. Vernon.
Dunb. & Wau.	10	Flat	50,000	Hicks L. & C. Wks.
East Broad Top.	60	Coal	22,400	Co.'s Shops.
East Side Mill & Lumber Co.	15	Flat		Seattle Car & Mfg.
Edgar Lumber Co.	15	Log		Amer. C. & F. Co.
Eld. Mar. & S. W.	3	Flat	60,000	Hicks L. & C. Wks.
Elg. Joliet & E.	*100	Dump	100,000	Amer. C. & F. Co.
	*300	Gondola	100,000	Amer. C. & F. Co.
El Paso & S. W.	*250	Dump	100,000	National Dump.
	*100	Ore	100,000	Pressed Steel.
	*250	Gondola	100,000	Pressed Steel.
	*100	Box	100,000	Standard.
Empire S. & I. Co.	40	Gondola	80,000	Hicks L. & C. Wks.
Enon Lbr. Co.	3	Log		Amer. C. & F. Co.
Erie	*100	Hart	100,000	Rodger Ballast.
	*500	Gondola	100,000	Standard.
	*500	Flat	100,000	Standard.
	*500	Produce	80,000	Amer. C. & F. Co.
	100	Flat	80,000	Co.'s Shops.
Esc. & Lake Sup.	20	Flat	60,000	Fitz Hugh Luther Co.
	21	Flat	80,000	Fitz Hugh Luther Co.
Fairm't Coal Co.	*2,000	Hopper	100,000	So. Baltimore.
Farrell Lbr. Co.	10	Log		Amer. C. & F. Co.
Florida East Coast	200	Flat		Pressed Steel.
	300	Flat		So. Atlantic.
Florida Ry. Co.	50	Flat	50,000	Georgia.
Ft. Smith & West.	200	Box		Mt. Vernon.
Ft. Smith Lbr. Co.	110	Flat	60,000	Hicks L. & C. Wks.
	5	Box	60,000	Hicks L. & C. Wks.
Ft. W. & D. Cy.	1,000	Box		Pullman.
Foster Lbr. Co.	20	Log		Amer. C. & F. Co.
Frank Bros. & Morris	1	Flat	100,000	Haskell & Barker.
Frost-Trigg Lumber Co.	86	Log	60,000	Amer. C. & F. Co.
Galv. Beau. & N. E.	40	Log		Beaumont.
Galv. Har. & San Antonio	*50	Hart	100,000	Rodger Ballast.
Ganlsaon Norton Lbr. Co.	15	Logging		Beaumont I. Wks.
General Contr. Co.	30	Flat	50,000	Hicks L. & C. Wks.
General Elec. Co.	2	Flat		Amer. C. & F. Co.
	1	Substation		Middletown.
Gen. Roofing Mfg. Co.	9	Tank		Amer. C. & F. Co.
Gentry Bros.	1	Circus		Amer. C. & F. Co.
Ga. Fla. & Ala.	4	Tenders	60,000	Georgia.
	23	Flat	60,000	Georgia.
	23	Flat	60,000	Fitz Hugh Luther.
Georgia R. R.	100	Box		Co.'s Shops.
Ga. So. & Fla.	500	Flat	60,000	Co.'s Shops.
German-American Car Lines	*300	Tank	80,000	Co.'s Shops.
Germain-Boyd Lbr. Co.	27	Log	40,000	Marshall.
Grace & McLeod Lbr. Co.	4	Flat		Amer. C. & F. Co.
Gd. R. & Indiana.	*350	Box	100,000	Amer. C. & F. Co.
	*35	Gondola	100,000	Pressed Steel.
	*150	Coal	100,000	Pressed Steel.
	*50	Flat	100,000	Amer. C. & F. Co.
	*50	Stock	100,000	Amer. C. & F. Co.
Grand Trunk	400	Refrig.	60,000	Mt. Vernon.
	500	Stock	60,000	Mt. Vernon.
	200	Ballast	80,000	Haskell & Barker.
	36	Cabooses		Co.'s Shops.
	2,400	Box	60,000	Canada Car Co.
	1,000	Hopper	100,000	Pressed Steel.
	1,250	Box	60,000	Pullman.
	1,000	Flat	60,000	Pullman.
	250	Furniture	60,000	Hicks L. & C. Wks.
	500	Flat	60,000	Hicks L. & C. Wks.
Grand Trunk Pac.	2,500	Box	60,000	Rhodes Curry.
	1,900	Box	60,000	Canada Car.
	500	Hart	80,000	Dominion Dump.
Grant Land & Lbr. Co.	20	Log	50,000	Amer. C. & F. Co.
Graves Tatum Co.	8	Log		Amer. C. & F. Co.
Great Bear Spring	14	Tank		Pressed Steel.

Purchaser.	No.	Kind.	Capacity.	Builder.
Great Northern.	4,000	Box	80,000	Haskell & Barker.
	1,000	Ore	100,000	Amer. C. & F. Co.
	2,000	Box	80,000	Haskell & Barker.
	500	Flat	80,000	Haskell & Barker.
Great West. Dist. Co.	10	Tank		Amer. C. & F. Co.
Green Bay & West.	150	Box	60,000	Haskell & Parker.
Greene Co. Lbr. Co.	10	Flat		Amer. C. & F. Co.
Gulf & Ship Island	40	Hart	80,000	Rodger Ballast.
	500	Flat	80,000	Amer. C. & F. Co.
Gulf Refining Co.	*24	Comp. Tank	8,000 g.	Standard.
	*6	Tank	5,000 g.	Standard.
	*170	Tank	8,000 g.	Standard.
Gunyan Valley Fuel Co.	100	Coal	80,000	So. Baltimore.
Hamilton Powder Co.	1	Tank	80,000	Rhodes, Curry.
Harriman Lines.	*6,000	Refrig.		Amer. C. & F. Co.
Heinz, H. J., Co.	5	Tank	5,580 g.	Middletown.
Henderson Lbr. Co.	10	Log		Amer. C. & F. Co.
Hewitt Lee Lbr. Co.	5	Flat	50,000	Hicks L. & C. Wks.
Hocking Coal & Iron Co.	3	Gondola	100,000	Ralston.
Hocking Valley.	*1,000	Box	60,000	Pullman.
	*1,000	Gondola	100,000	Ralston.
	*2,000	Gondola	100,000	Ralston.
Holly & Swink.	50	Nat. Dump	80,000	National Dump.
	5	Box	60,000	Hicks L. & C. Wks.
	10	Flat	50,000	Hicks L. & C. Wks.
Hope Lbr. Co.	3	Log	30,000	Lima.
	4	Log	40,000	Marshall.
Horseshoe Lbr. Co.	5	Log		Amer. C. & F. Co.
Howe & Davidson.	*2	Tank	80,000	Heidendorf.
Hunt. & Broad Top	321	Hopper	100,000	Amer. C. & F. Co.
	200	Hopper		Pressed Steel.
Illinois Central.	400	Hart		Rodger Ballast.
	531	Box	80,000	Co.'s Shops.
	*1,000	Box	80,000	Standard.
	*500	Flat	100,000	Standard.
	*1,500	Gondola	100,000	Cambria.
	*1,500	Gondola	100,000	Pressed Steel.
	800	Furniture	60,000	Amer. C. & F. Co.
	30	Gondola	80,000	Co.'s Shops.
	20	Box	80,000	Co.'s Shops.
Indpls. Abattoir Co.	2	Refrig.		Amer. C. & F. Co.
Ingoldsby Auto Car	15	Ingoldsby		Pullman.
	12	Ingoldsby	50,000	Barney & Smith.
Inland Steel	50	Gondola	80,000	Haskell & Barker.
Intercolonial	60	Box	60,000	Rhodes, Curry.
	200	Hopper	80,000	Rhodes, Curry.
	25	Box	60,000	Rathbun.
Interstate	20	Hopper	80,000	Western Steel.
Int. & Gt. North.	20	Caboose		Co.'s Shops.
Int. Coal Min. Co.	5	Hopper		Rhodes, Curry.
Isthmian Canal Com.	800	Flat	80,000	So. Atlantic.
	700	Flat	80,000	Amer. C. & F. Co.
	200	Dump		Western Wh. Scraper.
	*1	Dump	80,000	King-Lawson.
	2	Flat	50,000	Hicks L. & C. Wks.
Izett Lbr. Co. Jeanerette Lbr. & Shingle Co.	8	Log		Marshall.
Jordan, O. F., Co.	20	Flat	60,000	Hicks L. & C. Wks.
Jucaro Sugar Co.	50	Flat	50,000	Fitz-Hugh, Luther.
Kanawha & Mich.	*500	Gondola	100,000	Ralston.
Kanawha & W. Va.	100	Gondola	60,000	Hicks L. & C. Wks.
	20	Flat	60,000	Hicks L. & C. Wks.
	240	Gondola	80,000	Hicks L. & C. Wks.
K. C. M. & O.	50	Gondola		Amer. C. & F. Co.
	12	Flat		Amer. C. & F. Co.
Kan. City Oil Co.	*4	Tank	10,000 g.	Rettendorf.
Kan. City South.	100	Tank	10,000 g.	Amer. C. & F. Co.
	10	Cabooses		Amer. C. & F. Co.
Kelly, Hugh, & Co.	*200	Flat	40,000	Middletown.
	*250	Flat	30,000	Ramapo Ir. Wks.
Kelly's Cr. & N. W.	80	Gondola		Amer. C. & F. Co.
Kerbaugh & Co., Inc.	*20	King-Lawson	80,000	Middletown.
Keweenaw Cent.	5	Flat	60,000	Hicks L. & C. Wks.
	5	Flat	50,000	Hicks L. & C. Wks.
	5	Box	60,000	Hicks L. & C. Wks.
	10	Gondola	60,000	Hicks L. & C. Wks.
Keys Fannin Lbr. Co.	12	Log		Amer. C. & F. Co.
Keystone Plaster Co.	45	Dump	12,000	Rhodes, Curry.
Kilp. Bros. & Collins	87	Flat	50,000	Fitz-Hugh Luther.
Kingan Refrig. Line	60	Refrig.	60,000	Amer. C. & F. Co.
	3	Tank	60,000	Inter-State.
Knickerbocker Ice Co.	50	Gondola	80,000	Pullman.
Kuhnhardt & Co.	12	Flat		Amer. C. & F. Co.
Lacey Lbr. Co.	4	Log		Amer. C. & F. Co.
LaCrosse & S. E.	2	Box	50,000	Hicks L. & C. Wks.
L. Champ. & Morrish	25	Ore	44,000	Pressed Steel.
L. Erie & West.	1,000	Box	80,000	Haskell & Barker.
	20	Caboose		L. S. Shops.
L. S. & Mich. So.	*1,000	Box	80,000	Pullman.
	*1,000	Hop. Gond.	100,000	Standard.
	*1,000	Twin Hop.	100,000	Standard.
	*1,000	Twin Hop.	100,000	Amer. C. & F. Co.
	*200	Hart	100,000	Rodger Ballast.
	500	Box	80,000	Haskell & Barker.
	*49	Automobile		Co's. Shops.

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14D

RAILROAD GAZETTE
DEC 21 06

Robert E. Slagle, for the past three years assistant district superintendent of the Pullman Company at Kansas City, Mo., has gone, as half owner, to the Acme Supply Co., 100 Lake street, Chicago.

The Chicago Great Western has ordered 300 box cars of 70,000 lbs. capacity from the Pullman Company. These cars will weigh 36,000 lbs. and will measure 36 ft. long, 8 ft. 6 in. wide and 8 ft. high, all inside measurements. The special equipment includes:

Brakes	Westinghouse
Couplers	Janney
Doors	Security
Roofs	Chicago
Trucks	Barber
Wheels	Griffin

14

E

FREIGHT CARS ORDERED IN 1906—Continued.

*Asterisk indicates steel or steel underframe cars.

Purchaser.	No.	Builder.	*Compound.
L. Sup. & Ishp...	*100	Ore	100,000 Pressed Steel Car.
Landry Lbr. Co..	8	Logging	Beaumont I. Wks.
Landry Sharp C. C.	31	Ballast	80,000 Haskell & Barker.
Las Vegas & Ton.	4	Caboose	Pullman.
Lehigh & N. Eng.	4	Caboose	Co's. Shops.
Lehigh & Hud. R.	10	Gondola	80,000 So. Balt.
	250	Hopper	80,000 So. Balt.
	100	Box	60,000 Standard Car.
	*25	Ore	80,000 Pressed Steel.
	6	Hopper	Amer. C. & F. Co.
Leh. Portl. Cem.	10	Horse Exp.	Harlan & Moll.
Lehigh Valley...	*1,000	Hopper	100,000 Standard.
	*500	Gondola	100,000 Cumberln.
	102	Produce	60,000 Standard.
	25	Automobile	60,000 Standard.
	100	Cinder	60,000 Standard.
	*2,516	Box	80,000 Standard.
	*1,000	Coal	100,000 Standard.
	12	Caboose	Co's. Shops.
Lexingt'n & East.	10	Coal	80,000 Amer. C. & F. Co.
Liberty Co. Lbr. Co.	15	Logging	Beaumont I. Wks.
Liberty-White ..	10	Flat	50,000 Georgia.
Livesak, Perry & Gulf	50	Flats	60,000 So. Atlantic.
Live Poult. Trans Co.	100	Poultry	Amer. C. & F. Co.
Long Island.....	65	Gondola	100,000 Penn. R. R. Shops.
	35	Gondola	100,000 Pressed Steel.
	100	Box	100,000 Pressed Steel.
La. & Arkansas..	100	Flat	60,000 Barney & Smith.
	50	Box	60,000 B. & S. U. Co.
La. & Pacific...	10	Flat	60,000 Fitz-Hugh, Luther.
	10	Flat	80,000 Fitz-Hugh, Luther.
Louisiana Cent...	30	Log.	Amer. C. & F. Co.
La. Ry. & Nav..	250	Box	60,000 Amer. C. & F. Co.
	12	Flat	Amer. C. & F. Co.
	34	Flat	60,000 Fitz-Hugh, Luher.
	35	Flat	60,000 Hicks L. & C. Wks.
La. West. R. R.	*200	Box	100,000 Pressed Steel.
	*200	Flat	100,000 Standard.
Louis. & Nash...	1,150	Box	65,000 Co's. Shops.
	1,250	Gondola	80,000 Co's. Shops.
	500	Refrig.	65,000 Co's. Shops.
	200	Stock	65,000 Co's. Shops.
	400	Flat	80,000 Co's. Shops.
	300	Caboose	80,000 Co's. Shops.
	100	Ore	100,000 Co's. Shops.
	76	Cabooses	Co's. Shops.
	75	Tanks	Co's. Shops.
Louis. Cot. Oil C.	*10	Tank	10,000 g. Amer. C. & F. Co.
Lutcher & Moore	10	Log.	50,000 Orange.
MacDonnell & O'Brien	30	Hart	80,000 Dominion Dump.
Maine Central	1,000	Box	60,000 Western Steel.
	500	Box	60,000 Western Steel.
	*200	Gondola	80,000 Standard.
Mann McCann Co.	25	Grader	Amer. C. & F. Co.
Manufacturers Jct.	3	Flat	80,000 Hicks L. & C. Wks.
Marquez & S. E.	*100	Ore	100,000 Pressed Steel.
	3	Caboose	Amer. C. & F. Co.
Maryl'd & Penn..	25	Box	60,000 So. Baltimore.
	8	Gondola	60,000 So. Baltimore.
	2	Stock	60,000 So. Baltimore.
	4	Flat	40,000 Fitz-Hugh, Luther.
McCall Ferry Co.	1	Box	Middletown.
McClintie-Marshall Co.	*2	Box	Amer. C. & F. Co.
McCloud River...	75	Flat	Amer. C. & F. Co.
	7	Dump	Amer. C. & F. Co.
Memphis Sand & Gravel Co.	500	Refrig.	60,000 Co's. Shops.
Merchants Desph. Transp.	7	Dump	4,000 g. Bettendorf.
Merrimac Chem. Co.	1	Tank	6,000 g. Barney & Smith.
Mexican Central	1,150	Box	60,000 Barney & Smith.
	160	Stock	60,000 Barney & Smith.
	91	Flat	80,000 Barney & Smith.
	*750	Box	80,000 Standard.
	*150	Stock	60,000 Standard.
	*100	Flat	80,000 Standard.
	*180	Tank	9,800 g. Standard.
Mexican Interna.	300	Gondola	80,000 So. Atlantic.
	100	Box	80,000 Amer. C. & F. Co.
	100	Stock	80,000 Amer. C. & F. Co.
	50	Dump	80,000 National Dump C.
	4	Soda Ash	Amer. C. & F. Co.
Mich. Ammo. Co.	*2	Tank	Amer. C. & F. Co.
Michigan Central	*500	Flat	80,000 Amer. C. & F. Co.
	*1,000	Twin Hop.	100,000 Amer. C. & F. Co.
	*1,500	Box	80,000 Pullman.
	*500	Box	60,000 Pullman.
	*200	Hart Con.	100,000 Rodger Ballast.
Middle Park R. R.	14	Flat	50,000 Fitz-Hugh, Luther.
Midland Lin. Co.	*5	Tank	Amer. C. & F. Co.
Midland Valley...	60	Gondola	80,000 Hicks L. & C. Wks.
	4	Cabooses	Mt. Vernon.
	250	Box	80,000 Mt. Vernon.
	300	Coal	80,000 Mt. Vernon.
Miller Supply Co.	12	Log	Amer. C. & F. Co.
Miller Vida S. M. Co.	15	Logging	Beaumont I. Wks.
Milliken Bros..	10	Flat	80,000 Fitz-Hugh, Luther.
Milw. Refr. Tr. C.	200	Refrig.	Co's. Shops.
	1	Car Body	Pullman.
Mineral Ft. Zinc	50	Tank	80,000 Bettendorf.
Mineral Range..	60	Hopper	80,000 Amer. C. & F. Co.
Mpls & Rainy Riv	200	Log.	40,000 Russell.
Mpls & St. Louis	900	Box	60,000 Amer. C. & F. Co.
	200	Stock	60,000 Amer. C. & F. Co.
Mpls St. Pl & S. S. M.	1,000	Box	60,000 Amer. C. & F. Co.
M. St. P. & S. S.M.	200	Flat	60,000 Amer. C. & F. Co.
	25	Caboose	Amer. C. & F. Co.
Mississippi Cent..	200	Flat	80,000 Co's. Shops.
	40	Hart	80,000 Rodger Ballast. ..
	600	Flat	80,000 Co's. Shops.
Miss. R. & Bonne Terre	200	Dump	Amer. C. & F. Co.
Mo. & N. Ark..	30	Flat	80,000 Amer. C. & F. Co.
Mo. Kan. & Tex.	100	Hart	80,000 Rodger Ballast.
	1,700	Box	60,000 Amer. C. & F. Co.
	300	Vent. Box	60,000 Amer. C. & F. Co.
	300	Furniture	60,000 Amer. C. & F. Co.
	6	Tank	100,000 Amer. C. & F. Co.
Mo. Pac. Coal Co.	1,000	Coal	80,000 Mt. Vernon.
Mo. Riv. Despch.	1	Refrig.	Amer. C. & F. Co.
Mobile & Ohio ..	600	Gondola	80,000 Amer. C. & F. Co.
	20	Caboose	Mt. Vernon.
	250	Gondola	Co's. Shops.
Monongah. Con..	50	Gondola	200,000 Amer. C. & F. Co.
Mooney Car Line	2	Box	60,000 Canada Car.
Morelia & Tacam..	10	Flat	50,000 Hicks L. & C. Wks.
Morgan's La. & Texas	*300	Box	100,000 Pressed Steel.
	*200	Flat	100,000 Standard.
	*50	Hart	100,000 Rodger Ballast.
Morris & Co....	100	Refrig.	60,000 Co's. Shops.
Morrisd'le Coal C	150	Hoppers	80,000 Allison.
Motley Green & Co.	15	Flat	Amer. C. & F. Co.
	10	Box	Amer. C. & F. Co.
	5	Stock	Amer. C. & F. Co.
Murphy Chair Co.	1	Furn.	Amer. C. & F. Co.
Nashv. Chatt. & St. L.	500	Box	60,000 Amer. C. & F. Co.
	500	Coal	80,000 Co's. Shops.
	25	Beer	60,000 Co's. Shops.
Natchez, Col. & Mob.	20	Flat	50,000 Co's. Shops.
Nat. Ammo. Co..	13	Tank	Amer. C. & F. Co.
Nat. Car Line...	50	Refrig.	60,000 Co's. Shops.
Nat. Packing Co.	5	Tank	Amer. C. & F. Co.
National of Mex.	150	Gondola	80,000 Co's Shops.
	100	Flat	80,000 Co's Shops.
	15	Cabooses	Co's Shops.
	325	Box	80,000 Amer. C. & F. Co.
	50	Stock	80,000 Amer. C. & F. Co.
	50	Dump	80,000 National Dump.
	10	Tank	Amer. C. & F. Co.
Nat. Refin'g Co..	100	Tank	Amer. C. & F. Co.
Nelson & Aberene..	6	Box	60,000 Hicks L. & C. Wks.
Nevada Northern	*10	Hopper	100,000 Standard.
	*30	Dump	100,000 National Dump.
	2	Caboose	Amer. C. & F. Co.
Newburgh & So. Shore	*100	Gondola	100,000 Middletown.
	*100	Gondola	100,000 Pressed Steel.
New Canadian Co.	2	Box	60,000 Rhodes Curry.
	8	Flat	60,000 Rhodes Curry.
New Hav & Dun.	5	Hopper	50,000 Co's. Shops.
New Mex. Mid'l'd	1	Caboose	Amer. C. & F. Co.
New Or. Gt. Nor.	300	Flat	80,000 Pressed Steel.
New River H. & W.	8	Flat	50,000 Hicks L. & C. Wks.
Newton & N. W.	80	Coal	60,000 Hicks L. & C. Wks.
N. O. & North-eastern	333	Box	60,000 Amer. C. & F. Co.
	271	Flat	80,000 Amer. C. & F. Co.
	100	Coal	80,000 Amer. C. & F. Co.
N. O. Nat. & Nach.	32	Flat	50,000 Fitz-Hugh, Luther.
	20	Flat	50,000 Fitz-Hugh, Luther.
	4	Box	50,000 Fitz-Hugh, Luther.
N. Y. & Pennsyl.	12	Hopper	Amer. C. & F. Co.
N. Y. C. & H. R.	100	Stone	Haskell & Barker.
	*2,000	Box	80,000 Amer. C. & F. Co.
	*1,000	Twin Hopper	100,000 Amer. C. & F. Co.
	*1,000	Flat	80,000 Amer. C. & F. Co.
	50	Flat	Co's. Shops.
	*500	Box	80,000 Haskell & Barker.
N. Y. C. & St. L.	2,500	Box	80,000 Haskell & Barker.
	1,500	Gondola	80,000 Haskell & Barker.
N. Y. N. H. & H.	*100	Auto. Box	60,000 Keith.
	*600	Box	60,000 Keith.
	*500	Refrig.	60,000 Amer. C. & F. Co.
	*2,000	Box	60,000 Standard.
	*500	Coal	80,000 Standard.
	*150	Flat	80,000 Standard.
	1,200	Box	60,000 Keith.
N. Y. Ont. & W.	50	Hart	Rodger Ballast.
N. Y., Ph. & Nor.	*300	Box	80,000 Pressed Steel.
	*50	Gondola	100,000 Pressed Steel.
Nona Mills Co....	12	Log	Beaumont I. Wks.
	1	Caboose	Beaumont I. Wks.
Norfolk & South.	600	Box	60,000 Mt. Vernon.
	75	Furniture	60,000 Mt. Vernon.
	50	Gondola	60,000 Mt. Vernon.
	210	Flat	60,000 Amer. C. & F. Co.
Norfolk & West.	*2,500	Hopper	100,000 So. Baltimore.
	*1,000	Gondola	100,000 Western Steel.
	*500	Stock	80,000 So. Baltimore.
	50	Caboose	Co. Shops.
	27	Flat	80,000 Co. Shops.
No. Linseed Oil Co.	2	Tank	Amer. C. & F. Co.
Northern Pac....	3,000	Box	80,000 Pullman.
	150	Caboose	Co. Shops.
	1,000	Stock	50,000 Co. Shops.
	500	Box	80,000 Co. Shops.
	1,000	Flat	70,000 Co. Shops.
	*500	Gondola	100,000 National Dump.
	150	Refrig.	50,000 Co. Shops.
	4,000	Box	80,000 Amer. C. & F. Co.
	500	Hart	80,000 Rodger Ballast.

14c

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14

E

FREIGHT CARS ORDERED IN 1906—Continued.

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Purchaser.	No.	Builder.	*Compound.
L. Sup. & Ishp...	*100	Ore	100,000	Pressed Steel Car.
Landry Lbr. Co...	8	Logging		Beaumont I. Wks.
Lantry Sharp C. C.	31	Ballast	80,000	Haskell & Barker.
Las Vegas & Ton.	4	Caboose		Pullman.
Lehigh & N. Eng.	4	Caboose		Co's. Shops.
Lehigh & Hud. R.	10	Gondola	80,000	So. Balt.
	250	Hopper	80,000	So. Balt.
	100	Box	60,000	Standard Car.
	*25	Ore	80,000	Pressed Steel.
Leh. Portl. Cem.	6	Hopper		Amer. C. & F. Co.
Lehigh Valley...	10	Horse Exp.		Harlan & Moll.
	*1,000	Hopper	100,000	Standard.
	*500	Gondola	80,000	Cambria.
	102	Produce	60,000	Standard.
	25	Automobile	60,000	Standard.
	100	Cinder	60,000	Standard.
	*2,510	Box	80,000	Standard.
	*1,000	Coal	100,000	Standard.
	12	Caboose		Co's. Shops.
Lexingt'n & East.	10	Coal	80,000	Amer. C. & F. Co.
Liberty Co. Lbr. Co.	15	Logging		Beaumont I. Wks.
Liberty-White	10	Flat	50,000	Georgia.
Livcoak, Perry & Gulf	50	Flats	60,000	So. Atlantic.
Live Poult. Trans Co.	100	Poultry		Amer. C. & F. Co.
Long Island	65	Gondola	100,000	Penn. R. R. Shops.
	35	Gondola	100,000	Pressed Steel.
	100	Box	100,000	Pressed Steel.
La. & Arkansas..	100	Flat	60,000	Barney & Smith.
	50	Box	60,000	B. & S. C. Co.
La. & Pacific...	10	Flat	60,000	Fitz-Hugh, Luther.
	10	Flat	80,000	Fitz-Hugh, Luther.
Louisiana Cent...	30	Log.		Amer. C. & F. Co.
La. Ry. & Nav..	250	Box	60,000	Amer. C. & F. Co.
	13	Flat		Amer. C. & F. Co.
	34	Flat	60,000	Fitz-Hugh, Luther.
	35	Flat	50,000	Hicks L. & C. Wks.
La. West. R. R.	*200	Box	100,000	Pressed Steel.
	*200	Flat	100,000	Standard.
Louis. & Nash...	1,150	Box	65,000	Co's. Shops.
	1,250	Gondola	80,000	Co's. Shops.
	600	Refrig.	65,000	Co's. Shops.
	200	Stock	65,000	Co's. Shops.
	400	Flat	80,000	Co's. Shops.
	300	Coke	80,000	Co's. Shops.
	100	Ore	100,000	Co's. Shops.
	76	Cabooses		Co's. Shops.
	75	Tanks		Co's. Shops.
Louis. Cot. Oil C.	*10	Tank	10,000 g.	Amer. C. & F. Co.
Lutcher & Moore	10	Log.	50,000	Orange.
MacD o n e l l & O'Brien	30	Hart	80,000	Dominion Dump.
Maine Central ...	1,000	Box	60,000	Western Steel.
	500	Box	60,000	Western Steel.
	*200	Gondola	80,000	Standard.
Mann McCann Co.	25	Grader		Amer. C. & F. Co.
Manufacturers Jct.	3	Flat	80,000	Hicks L. & C. Wks.
Marquet. & S. E.	*100	Ore	100,000	Pressed Steel.
	3	Caboose		Amer. C. & F. Co.
Maryl'd & Penn..	25	Box	60,000	So. Baltimore.
	8	Gondola	60,000	So. Baltimore.
	2	Stock	60,000	So. Baltimore.
	4	Flat	40,000	Fitz-Hugh, Luther.
McCall Ferry Co.	1	Box		Middletown.
McClintic-Marshall Co.	*2	Box		Amer. C. & F. Co.
McCloud River...	75	Flat		Amer. C. & F. Co.
Memphis Sand & Gravel Co.	7	Dump		Amer. C. & F. Co.
Merchants Deph. Transp.	500	Refrig.	60,000	Co's. Shops.
Merrimac Chem. Co.	1	Tank	4,000 g.	Bettendorf.
Mexican Central.	1,150	Box	60,000	Barney & Smith.
	160	Stock	60,000	Barney & Smith.
	91	Flat	80,000	Barney & Smith.
	*750	Box	80,000	Standard.
	*150	Stock	60,000	Standard.
	*100	Flat	80,000	Standard.
	*180	Tank	9,500 g.	Standard.
Mexican Interna.	300	Gondola	80,000	So. Atlantic.
	100	Box	80,000	Amer. C. & F. Co.
	100	Stock	80,000	Amer. C. & F. Co.
	50	Dump	80,000	National Dump C.
Mich. Alkali Wks	4	Soda Ash		Amer. C. & F. Co.
Mich. Ammo. Co.	*2	Tank		Amer. C. & F. Co.
Michigan Central	*500	Flat	80,000	Amer. C. & F. Co.
	*1,000	Twin Hop.	100,000	Amer. C. & F. Co.
	*1,500	Box	80,000	Pullman.
	*500	Box	60,000	Pullman.
	*200	Hart Con.	100,000	Rodger Ballast.
Middle Park R. R.	14	Flat	50,000	Fitz-Hugh, Luther.
Midland Lln. Co.	*5	Tank		Amer. C. & F. Co.
Midland Valley...	60	Gondola	80,000	Hicks L. & Wks.
	4	Cabooses		Mt. Vernon.
	250	Box	60,000	Mt. Vernon.
	300	Coal	80,000	Mt. Vernon.
Miller Supply Co.	12	Log		Amer. C. & F. Co.
Miller Vida S. M. Co.	15	Logging		Beaumont I. Wks.
Milliken Bros.	10	Flat	80,000	Fitz-Hugh, Luther.
Milw. Refr. Tr. C.	200	Refrig.		Co's. Shops.
	1	Car Body		Pullman.
Mineral Pt. Zinc	50	Tank	80,000	Bettendorf.
Mineral Range ..	60	Hopper	80,000	Amer. C. & F. Co.
Mpls & Rainy Riv	200	Log.	40,000	Russell.
Mpls & St. Louis	900	Box	60,000	Amer. C. & F. Co.
	200	Stock	60,000	Amer. C. & F. Co.
Mpls St. Pl & S. S. M.	1,000	Box	60,000	Amer. C. & F. Co.
M. St. P. & S. S.M.	200	Flat	60,000	Amer. C. & F. Co.
	25	Caboose		Amer. C. & F. Co.
Mississippi Cent..	200	Flat	80,000	Co's. Shops.
	40	Hart	80,000	Rodger Ballast. ..
	600	Flat	80,000	Co's. Shops.
Miss. R. & Bonne Terre	200	Dump		Amer. C. & F. Co.
Mo. & N. Ark...	30	Flat	80,000	Amer. C. & F. Co.
Mo. Kan. & Tex.	100	Hart	80,000	Rodger Ballast.
	1,700	Box	60,000	Amer. C. & F. Co.
	300	Vent. Box	60,000	Amer. C. & F. Co.
	300	Furniture	60,000	Amer. C. & F. Co.
	6	Tank	100,000	Amer. C. & F. Co.
Mo. Pac. Coal Co.	1,000	Coal	80,000	Mt. Vernon.
Mo. Riv. Despch.	1	Refrig.		Amer. C. & F. Co.
Mobile & Ohio .	600	Gondola	80,000	Amer. C. & F. Co.
	20	Caboose		Mt. Vernon.
	200	Gondola	80,000	Co's. Shops.
Monongah. Con.,	50	Gondola	200,000	Amer. C. & F. Co.
Mooney Car Line	2	Box	60,000	Canada Car.
Morella & Tacam..	10	Flat	50,000	Hicks L. & C. Wks.
Morgan's La. & Texas	*300	Box	100,000	Pressed Steel.
	*200	Flat	100,000	Standard.
	*50	Hart	100,000	Rodger Ballast.
Morris & Co....	100	Refrig.	60,000	Co's. Shops.
Morrisd'le Coal C	150	Hoppers	80,000	Allison.
Motley Green & Co.	15	Flat		Amer. C. & F. Co.
	10	Box		Amer. C. & F. Co.
	5	Stock		Amer. C. & F. Co.
	1	Furn.		Amer. C. & F. Co.
Murphy Chair Co.				
Nashv. Chatt. & St. L.	500	Box	60,000	Amer. C. & F. Co.
	500	Coal	80,000	Co's. Shops.
	25	Beer	60,000	Co's. Shops.
Natchez, Col. & Mob.	20	Flat	50,000	Co's. Shops.
Nat. Ammo. Co.,	12	Tank		Amer. C. & F. Co.
Nat. Car Line...	50	Refrig.	60,000	Co's. Shops.
Nat. Packing Co.	5	Tank		Amer. C. & F. Co.
National of Mex.	150	Gondola	80,000	Co's Shops.
	100	Flat	80,000	Co's Shops.
	15	Cabooses		Co's Shops.
	325	Box	80,000	Amer. C. & F. Co.
	50	Stock	80,000	Amer. C. & F. Co.
	50	Dump	80,000	National Dump.
	10	Tank		Amer. C. & F. Co.
Nat. Refin'g Co..	100	Tank		Amer. C. & F. Co.
Nelson & Aberene..	6	Box	60,000	Hicks L. & C. Wks.
Nevada Northern	*10	Hopper	100,000	Standard.
	*20	Dump	100,000	National Dump.
	2	Caboose		Amer. C. & F. Co.
Newburgh & So. Shore	*100	Gondola	100,000	Middletown.
	*100	Gondola	100,000	Pressed Steel.
New Canadian Co.	2	Box	60,000	Rhodes Curry.
	8	Flat	60,000	Rhodes Curry.
New Hav & Dan.	5	Hopper	50,000	Co's. Shops.
New Mex. Mid'd	1	Caboose		Amer. C. & F. Co.
New Or. Gt. Nor.	300	Flat	80,000	Pressed Steel.
New River H. & W.	5	Flat	80,000	Hicks L. & C. Wks.
Newton & N. W.	80	Coal	60,000	Hicks L. & C. Wks.
N. O. & Northeastern	333	Box	60,000	Amer. C. & F. Co.
	271	Flat	80,000	Amer. C. & F. Co.
	100	Coal	80,000	Amer. C. & F. Co.
N. O. Nat. & Nach.	32	Flat	60,000	Fitz-Hugh, Luther.
	20	Flat	50,000	Fitz-Hugh, Luther.
	4	Box	50,000	Fitz-Hugh, Luther.
N. Y. & Pennsyl.	12	Hopper		Amer. C. & F. Co.
N. Y. C. & H. R.	100	Stone		Haskell & Barker.
	*2,000	Box	80,000	Amer. C. & F. Co.
	*1,000	Twin Hopper	100,000	Amer. C. & F. Co.
	*1,000	Flat	80,000	Amer. C. & F. Co.
	50	Flat		Co's. Shops.
	*500	Box	80,000	Haskell & Barker.
N. Y. C. & St. L.	2,500	Box	80,000	Haskell & Barker.
	1,500	Gondola	80,000	Haskell & Barker.
N. Y. N. H. & H.	*100	Auto. Box	60,000	Keith.
	*600	Box	60,000	Keith.
	*500	Refrig.	60,000	Amer. C. & F. Co.
	*2,000	Box	60,000	Standard.
	*500	Coal	80,000	Standard.
	*150	Flat	80,000	Standard.
	1,200	Box	60,000	Keith.
N. Y. Ont. & W.	50	Hart		Rodger Ballast.
N. Y., Ph. & Nor.	*300	Box	80,000	Pressed Steel.
	*50	Gondola	100,000	Pressed Steel.
Nona Mills Co....	12	Log		Beaumont I. Wks.
	1	Caboose		Beaumont I. Wks.
Norfolk & South.	600	Box	60,000	Mt. Vernon.
	75	Furniture	60,000	Mt. Vernon.
	50	Gondola	60,000	Mt. Vernon.
	210	Flat	60,000	Amer. C. & F. Co.
Norfolk & West.	*2,500	Hopper	100,000	So. Baltimore.
	*1,000	Gondola	100,000	Western Steel.
	*500	Stock	80,000	So. Baltimore.
	50	Caboose		Co. Shops.
	27	Flat	80,000	Co. Shops.
	2	Tank		Amer. C. & F. Co.
Northern Pac....	3,000	Box	80,000	Pullman.
	150	Caboose		Co. Shops.
	1,000	Stock	50,000	Co. Shops.
	500	Box	80,000	Co. Shops.
	1,000	Flat	70,000	Co. Shops.
	*250	Gondola	100,000	National Dump.
	150	Refrig.	50,000	Co. Shops.
	4,000	Box	80,000	Amer. C. & F. Co.
	500	Hart	80,000	Rodger Ballast.

Purchaser.	No.	Kind.	Capacity.	Builder.
M. St. P. & S. S.M.	200	Flat	60,000	Amer. C. & F. Co.
	25	Caboose		Amer. C. & F. Co.
Mississippi Cent..	200	Flat	80,000	Co's. Shops.
	40	Hart	80,000	Rodger Ballast. ..
	600	Flat	80,000	Co's. Shops.
Miss. R. & Bonne Terre	200	Dump		Amer. C. & F. Co.
Mo. & N. Ark...	30	Flat	80,000	Amer. C. & F. Co.
Mo. Kan. & Tex.	100	Hart	80,000	Rodger Ballast.
	1,700	Box	60,000	Amer. C. & F. Co.
	300	Vent. Box	60,000	Amer. C. & F. Co.
	300	Furniture	60,000	Amer. C. & F. Co.
	6	Tank	100,000	Amer. C. & F. Co.
Mo. Pac. Coal Co.	1,000	Coal	80,000	Mt. Vernon.
Mo. Riv. Despch.	1	Refrig.		Amer. C. & F. Co.
Mobile & Ohio .	600	Gondola	80,000	Amer. C. & F. Co.
	20	Caboose		Mt. Vernon.
	200	Gondola	80,000	Co's. Shops.
Monongah. Con.,	50	Gondola	200,000	Amer. C. & F. Co.
Mooney Car Line	2	Box	60,000	Canada Car.
Morella & Tacam..	10	Flat	50,000	Hicks L. & C. Wks.
Morgan's La. & Texas	*300	Box	100,000	Pressed Steel.
	*200	Flat	100,000	Standard.
	*50	Hart	100,000	Rodger Ballast.
Morris & Co....	100	Refrig.	60,000	Co's. Shops.
Morrisd'le Coal C	150	Hoppers	80,000	Allison.
Motley Green & Co.	15	Flat		Amer. C. & F. Co.
	10	Box		Amer. C. & F. Co.
	5	Stock		Amer. C. & F. Co.
	1	Furn.		Amer. C. & F. Co.
Murphy Chair Co.				
Nashv. Chatt. & St. L.	500	Box	60,000	Amer. C. & F. Co.
	500	Coal	80,000	Co's. Shops.
	25	Beer	60,000	Co's. Shops.
Natchez, Col. & Mob.	20	Flat	50,000	Co's. Shops.
Nat. Ammo. Co.,	12	Tank		Amer. C. & F. Co.
Nat. Car Line...	50	Refrig.	60,000	Co's. Shops.
Nat. Packing Co.	5	Tank		Amer. C. & F. Co.
National of Mex.	150	Gondola	80,000	Co's Shops.
	100	Flat	80,000	Co's Shops.
	15	Cabooses		Co's Shops.
	325	Box	80,000	Amer. C. & F. Co.
	50	Stock	80,000	Amer. C. & F. Co.
	50	Dump	80,000	National Dump.
	10	Tank		Amer. C. & F. Co.
Nat. Refin'g Co..	100	Tank		Amer. C. & F. Co.
Nelson & Aberene..	6	Box	60,000	Hicks L. & C. Wks.
Nevada Northern	*10	Hopper	100,000	Standard.
	*20	Dump	100,000	National Dump.
	2	Caboose		Amer. C. & F. Co.
Newburgh & So. Shore	*100	Gondola	100,000	Middletown.
	*100	Gondola	100,000	Pressed Steel.
New Canadian Co.	2	Box	60,000	Rhodes Curry.
	8	Flat	60,000	Rhodes Curry.
New Hav & Dan.	5	Hopper	50,000	Co's. Shops.
New Mex. Mid'd	1	Caboose		Amer. C. & F. Co.
New Or. Gt. Nor.	300	Flat	80,000	Pressed Steel.
New River H. & W.	5	Flat	80,000	Hicks L. & C. Wks.
Newton & N. W.	80	Coal	60,000	Hicks L. & C. Wks.
N. O. & Northeastern	333	Box	60,000	Amer. C. & F. Co.
	271	Flat	80,000	Amer. C. & F. Co.
	100	Coal	80,000	Amer. C. & F. Co.
N. O. Nat. & Nach.	32	Flat	60,000	Fitz-Hugh, Luther.
	20	Flat	50,000	Fitz-Hugh, Luther.
	4	Box	50,000	Fitz-Hugh, Luther.
N. Y. & Pennsyl.	12	Hopper		Amer. C. & F. Co.
N. Y. C. & H. R.	100	Stone		Haskell & Barker.
	*2,000	Box	80,000	Amer. C. & F. Co.
	*1,000	Twin Hopper	100,000	Amer. C. & F. Co.
	*1,000	Flat	80,000	Amer. C. & F. Co.
	50	Flat		Co's. Shops.
	*500	Box	80,000	Haskell & Barker.
N. Y. C. & St. L.	2,500	Box	80,000	Haskell & Barker.
	1,500	Gondola	80,000	Haskell & Barker.
N. Y. N. H. & H.	*100	Auto. Box	60,000	Keith.
	*600	Box	60,000	Keith.
	*500	Refrig.	60,000	Amer. C. & F. Co.
	*2,000	Box	60,000	Standard.
	*500	Coal	80,000	Standard.
	*150	Flat	80,000	Standard.
	1,200	Box	60,000	Keith.
N. Y. Ont. & W.	50	Hart		Rodger Ballast.
N. Y., Ph. & Nor.	*300	Box	80,000	Pressed Steel.
	*50	Gondola	100,000	Pressed Steel.
Nona Mills Co....	12	Log		Beaumont I. Wks.
	1	Caboose		Beaumont I. Wks.
Norfolk & South.	600	Box	60,000	Mt. Vernon.
	75	Furniture	60,000	Mt. Vernon.
	50	Gondola	60,000	Mt. Vernon.
	210	Flat	60,000	Amer. C. & F. Co.
Norfolk & West.	*2,500	Hopper	100,000	So. Baltimore.
	*1,000	Gondola	100,000	Western Steel.
	*500	Stock	80,000	So. Baltimore.
	50	Caboose		Co. Shops.
	27	Flat	80,000	Co. Shops.
	2	Tank		Amer. C. & F. Co.
Northern Pac....	3,000	Box	80,000	Pullman.
	150	Caboose		Co. Shops.
	1,000	Stock	50,000	Co. Shops.
	500	Box	80,000	Co. Shops.
	1,000	Flat	70,000	Co. Shops.
	*250	Gondola	100,000	National Dump.
	150	Refrig.	50,000	Co. Shops.
	4,000	Box	80,000	Amer. C. & F. Co.
	500	Hart	80,000	Rodger Ballast.

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FREIGHT CARS ORDERED IN 1906—Continued.

*Asterisks indicates steel or steel underframe cars.

Purchaser.	No.	Kind.	Capacity.	Builder.
Northern Pac...	1,000	Flat	70,000	Amer. C. & F. Co.
	200	Refrig.	50,000	Amer. C. & F. Co.
	*1,000	Gondola	100,000	Pressed Steel.
	100	Box	80,000	Co. Shops.
North. J. E., Lbr. Co.	10	Flat	50,000	Hicks L. & C. Wks.
N. W. Log & Lbr. Co.	12	Flat	50,000	Hicks L. & C. Wks.
Nor. & St. Law.	12	Flat	50,000	Hicks L. & C. Wks.
Oak Pt. Piling & Lbr. Co.	10	Log	40,000	Seattle C. Mfg. Co.
Oklahoma Central	100	Hopper	.....	Pullman.
Oliver Ir. Min. Co.	75	Dump	.....	Russell.
Oneonta & Moh. Val.	10	Flat	60,000	Russell.
Opelousas Gulf & N. E.	3	Gondola	50,000	Fitz-Hugh, Luther.
Orange & N. W..	250	Box	80,000	Amer. C. & F. Co.
	50	Gondola	.....	Baumont Ir. Wks.
	50	Log	60,000	Beaumont Ir. Wks.
	100	Log	60,000	Orange Ir. Wks.
Ore. R. R. & N. Co.	*45	Tank	12,500 g.	Pressed Steel.
	*500	Box	100,000	Pressed Steel.
	*50	Hart	100,000	Pressed Steel.
	15	Caboose	.....	Rodger Ballast.
Ore. Short Line..	*200	Gondola	100,000	Pullman.
	*500	Stock	80,000	Standard.
	*100	Hopper	100,000	Pressed Steel.
	*100	Gondola	100,000	Cambria.
	*100	Flat Car Bodies	80,000	Pressed Steel.
	*500	Box	100,000	Standard.
	25	Caboose	.....	Pressed Steel.
Pacific Coast Co.	20	Flat	40,000	Pullman.
	50	Hopper	60,000	C. & F. S. Shops.
	10	Box	60,000	C. & P. S. Shops.
Panama R. R..	100	Hart	.....	C. & P. S. Shops.
Peerless Tank Line.	50	Tank	6,000	Rodger Ballast.
Peninsular	4	Flat	.....	Bettendorf.
Penn. Lines W..	*1,000	Gondola	100,000	Hicks L. & C. Wks.
	*700	Box	100,000	Pressed Steel.
	*250	Flat	100,000	Pressed Steel.
	*700	Gondola	100,000	Pressed Steel.
	*300	Coke	100,000	Standard.
	85	Caboose	.....	Standard.
Pennsylvania ...	*1,000	Gondola	100,000	Co. Shops.
	*4,000	Hopper	100,000	Pressed Steel.
	*4,000	Gondola	.....	Pressed Steel.
	*1,000	Gondola	100,000	Standard.
	*2,800	Hopper	100,000	Standard.
	*200	Hopper	100,000	Cambria.
	*1,000	Refrig.	100,000	Middletown.
	*100	Box (Auto).	100,000	Co. Shops.
	*2,500	Box	100,000	Co. Shops.
	361	Caboose	.....	Pressed Steel.
	64	Gondola	100,000	Co. Shops.
Penn. Refining Co.	*2	Comp. Tank	8,140 g.	Bettendorf.
	*4	Tank	8,285 g.	Warren S. C. Wks.
Penn. St. Co.	3	Coke	.....	Barney & Smith.
Peoria & Eastern.	*500	Twin Hop.	100,000	Pullman.
Pere Marquette..	4,000	Box	80,000	Co. Shops.
Phila. & Reading.	25	Caboose	.....	Beaumont I. Wks.
Pickering, W. R. Lbr. Co.	100	Logging	.....	Raiston.
Piney R. & Paint. Cr.	3	Gondola	100,000	Amer. C. & F. Co.
Pittsbg. & E. Coal Co.	*500	Hopper	100,000	Cambria.
	*1,000	Hopper	100,000	Standard.
Pittsb. & L. E.	*1,000	Gondola	100,000	Standard.
	*1,000	Coke	80,000	Standard.
Pittsb. Bing. & E.	20	Flat	60,000	Georgia.
Pittsb. Ind. Ir. Wks.	1	Flat	.....	Co. Shops.
Portland & Rumford Falls Ry..	*25	Flat	100,000	Pressed Steel.
	*5	Gondola	110,000	Pressed Steel.
Portland & S. W.	40	Flat	70,000	Seattle Car Mfg. Co.
Poudre Val. Gas Co.	*2	Tank	.....	Robt. M. Hart.
Poughkeepsie & E.	3	Flat	60,000	Hicks L. & C. Wks.
Prendergast Lbr. & Coal Co.	10	Log	.....	Amer. C. & F. Co.
Prescott & N. W.	20	Flat	60,000	Hicks L. & C. Wks.
Presc't Miller & Co.	4	Log	20,000	Au Sable Car Wks.
Pullman Co.	25	Gondola	.....	Pullman.
Pure Oil Co.	3	Tank	.....	Amer. C. & F. Co.
Queb. & L. St. Jno.	50	Flat	50,000	Hicks L. & C. Wks.
	50	Box	70,000	Rhodes Curry.
	2	Vans	.....	Rhodes Curry.
Quebec Central.	6	Refrig.	.....	Rhodes Curry.
	15	Stock	60,000	Co. Shops.
	75	Flat	60,000	Co. Shops.
Que. Montr. & S.	*1,400	Box	.....	Canada Car Co.
	*100	Stock	60,000	Canada Car Co.
Que. R. L. & P. Co.	25	Flat	40,000	Rathbun.
Racine Gas Co.	1	Tank	10,000	Bettendorf.
Raleigh & Southport	5	Box	60,000	Georgia.
Rich. Fred. & Po.	100	Box	80,000	Co. Shops.
	20	Hart	80,000	Rodger Ballast.
Richton Lbr. Co.	4	Log	.....	Amer. C. & F. Co.
Roaring Fork Ry.	1	Flat	60,000	Hicks L. & C. Wks.
Rocky Mountain.	24	Flat	80,000	Fitz-Hugh Luther.
	1	Caboose	.....	Fitz-Hugh Luther.
Roddis Lbr. Co.	2	Flat	50,000	Hicks L. & C. Wks.
Roelfings Sons Co.	*50	Gondola	100,000	Pressed Steel.
Rutland	150	Ballast	80,000	Haskell & Barker.
St. L. & Hannibal.	14	Gondola	60,000	Inter-State.
	3	Flat	60,000	Inter-State.
St. Louis & S. Fr.	15	Furniture	60,000	Amer. C. & F. Co.
	*2,000	Box	80,000	Amer. C. & F. Co.
	*500	Stock	80,000	Amer. C. & F. Co.
	*250	Flat	80,000	Amer. C. & F. Co.
	500	Furniture	60,000	Amer. C. & F. Co.
St. Louis & S. Fr.	50	Caboose	.....	Amer. C. & F. Co.
	250	Dump	80,000	Amer. C. & F. Co.
	150	Hart	80,000	Rodger Ballast.
	84	Box	60,000	Amer. C. & F. Co.
	*10	Hopper	100,000	Amer. C. & F. Co.
	*3	Dump	80,000	Amer. C. & F. Co.
	5	Caboose	60,000	National Dump.
	3	Hart	80,000	Amer. C. & F. Co.
	*50	Coke	100,000	Amer. C. & F. Co.
	*23	Coal	80,000	Amer. C. & F. Co.
St. L. Br. & Mex.	20	Tank	.....	Amer. C. & F. Co.
St. L. R. & Eq. Co.	10	Log	.....	Amer. C. & F. Co.
St. L. R. Mt. &Pac.	10	Box	60,000	Hicks L. & C. Wks.
	*4	Tank	8,000 g.	Eric Car Wks.
	100	Gondola	60,000	Amer. C. & F. Co.
	100	Box	60,000	Amer. C. & F. Co.
	22	Box	80,000	Amer. C. & F. Co.
	20	Gondola	60,000	Amer. C. & F. Co.
	4	Caboose	.....	Hicks L. & C. Wks.
St. L. L. S. & Ref. Co.	5	Gondola	.....	Amer. C. & F. Co.
Salem Fls Cty & W.	15	Flat	70,000	Amer. C. & F. Co.
	5	Flat	60,000	Fitz-Hugh Luther.
Salt L. & Ogden.	10	Flat	60,000	Hicks L. & C. Wks.
S. P. L. Ang. & S. L.	50	Flat	50,000	Fitz-Hugh Luther.
S. Cruz P. Co. Co.	14	Caboose	60,000	Pullman.
Scullin-G. Ir. & St. Co.	*12	Gondola	40,000	Atlas Car & Mfg. Co.
Seaboard Air Line.	5	Dump	.....	Amer. C. & F. Co.
	*500	Gondola	80,000	So. Baltimore.
	*1,000	Gondola	80,000	Pressed Steel.
	*1,000	Box	60,000	Pressed Steel.
	*611	Flat	60,000	Amer. C. & F. Co.
Sharon St. Hoop Co.	1	Flat	100,000	Middletown.
Sherman Cot. Oil	*3	Tank	60,000	Bettendorf.
Ship Isl. Lbr. Co.	3	Log	.....	Amer. C. & F. Co.
Shotter Co.	25	Tank	.....	Amer. C. & F. Co.
Shrev. Alex. & S. W.	1	Caboose	.....	Amer. C. & F. Co.
Shrev. Creosot. Co.	*8	Tank	.....	Amer. C. & F. Co.
Sierra Madre L. & L. Co.	500	Flat	60,000	Pullman.
Slade C. E.	2	Flat	50,000	Orange Ir. Wks.
Smith, C. L., Lbr. Co.	25	Logging	.....	Beaumont I. Wks.
Solvay Process Co.	*15	Tank	8,000 g.	Amer. C. & F. Co.
	*6	Tank	8,000 g.	Amer. C. & F. Co.
Somerset	10	Flat	60,000	Fitz-Hugh Luther.
Somerset C. Co.	*1,000	Hopper	100,000	So. Baltimore.
South Buffalo...	*30	Coke	80,000	Amer. C. & F. Co.
	*20	Flat	150,000	Amer. C. & F. Co.
Southern	1,000	Box	60,000	Lenoir.
	25	Poultry	60,000	Lenoir.
So. Pacific	*750	Box	100,000	Pressed Steel.
	*625	Tank (Oil).	12,500 g.	Standard.
	*500	Flat	100,000	Standard.
	30	Caboose	.....	Pullman.
So. States Lbr. Co.	70	Log	.....	Amer. C. & F. Co.
Spang Chal. & Co.	1	Flat	.....	Middletown.
Sparks John	1	Stock	100,000	Mt. Vernon.
Spen. Kellogg Co.	10	Tank	60,000	Amer. C. & F. Co.
Spokane Interna.	50	Box	80,000	Haskell & Barker Co.
	50	Flat	80,000	Haskell & Barker Co.
	20	Hart	80,000	Rodger Ballast.
	8	Caboose	80,000	Amer. C. & F. Co.
Springfield Ry.	20	Flat	60,000	Rhodes Curry.
Standard Oil Co.	24	Dump	.....	King-Lawson.
Standard St. Wks.	*4	King-Lawson.	80,000	Middletown.
	*1	King-Lawson.	70,000	Goodwin.
Sterling Coal Co.	*2	Flat	100,000	Middletown.
Stone Br. Lbr. Co.	3	Hopper	80,000	Middletown.
Strat. Ry. Con. Co.	20	Flat	.....	Amer. C. & F. Co.
Suddith Lbr. Co.	3	Log	.....	Hicks L. & C. Wks.
Summers E. W..	*14	Dump	.....	Amer. C. & F. Co.
Swift's L. S. Exp.	10	Horse	.....	Amer. C. & F. Co.
	22	Tank	60,000	Co. Shops.
	300	Refrig.	.....	Bettendorf.
Sydney & Louisb'g	34	Box	60,000	Co. Shops.
Tacoma Eastern.	100	Flat	60,000	Rodger Ballast.
	1	Caboose	80,000	Rhodes Curry.
Tampa Northern.	10	Flat	60,000	Co. Shops.
	10	Flat	60,000	Rodger Ballast.
	60	Flat	60,000	Hicks L. & C. Wks.
	20	Box	60,000	Georgia.
Tar River Lbr. Co.	10	Log	60,000	Mt. Vernon.
Tazwell Cl. Ld. Cor.	6	Log	.....	Raleigh Ir. Wks.
Tehuantepec Nat.	100	Box	.....	Amer. C. & F. Co.
Temisk. & No. Ont.	10	Flat	60,000	Amer. C. & F. Co.
	2	Vans	60,000	Rhodes Curry.
	75	Flat	60,000	Rhodes Curry.
	25	Vans	60,000	Rathbun.
Tenn. Ry. Co.	20	Flat	.....	Rathbun.
	7	Flat	60,000	Western Steel.
Texas & Pacific.	20	Caboose	50,000	Georgia.
Texas Central.	20	Flat	.....	Co. Shops.
Texas Co.	*381	Tank	60,000	Hicks L. & C. Wks.
	*45	Tank	8,000 g.	Amer. C. & F. Co.
Thornton & Alex.	1	Caboose	12,000 g.	Amer. C. & F. Co.
	3	Stock	.....	Co. Shops.
Three Sta. Lbr. Co.	80	Log	.....	Co. Shops.
	10	Flat	50,000	Russell.
	6	Flat	80,000	Co. Shops.
Tidewater	50	Flat	50,000	Hicks L. & C. Wks.
	6	Caboose	.....	Amer. C. & F. Co.
	36	Construction	.....	Amer. C. & F. Co.
Toledo & O. Cent.	*500	Gondola	100,000	Barney & Smith.
	*500	Box	80,000	Raiston.
	*100	Flat	60,000	Pullman.
Toledo Peoria & W.	50	Gondola	80,000	Pressed Steel.
Toledo Ft. Clin. & L. S.	2	Flat	50,000	Pullman.
				Hicks L. & C. Wks.

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RAILROAD GAZETTE
DEC 21 06

Robert E. Slagle, for the past three years assistant district superintendent of the Pullman Company at Kansas City, Mo., has gone, as half owner, to the Acme Supply Co., 100 Lake street, Chicago.

The Chicago Great Western has ordered 300 box cars of 70,000 lbs. capacity from the Pullman Company. These cars will weigh 36,000 lbs. and will measure 36 ft. long, 8 ft. 6 in. wide and 8 ft. high, all inside measurements. The special equipment includes:

Brakes	Westinghouse
Couplers	Janney
Doors	Security
Roofs	Chicago
Trucks	Barber
Wheels	Griffin

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FREIGHT CARS ORDERED IN 1906—Continued.

*Asterisk indicates steel or steel underframe cars.

Purchaser.	No.	Kind.	Capacity.	Builder.
Toledo St. L. & W.	750	Box	80,000	Amer. C. & F. Co.
	500	Gondola	80,000	Barney & Smith.
Tonopah & Goldd'd	15	Flat	60,000	Hicks L. & C. Wks.
	15	Box	60,000	Hicks & C. Wks.
	115	Gondola		Pullman.
	50	Ore	100,000	Pressed Steel.
Trinity & Braz. Val.	2	Caboose		American C. & F.
	50	Hart		Rodger Ballast.
	25	Tank		American C. & F.
	900	Box		Pullman.
Trinity Cot. Oil Co.	15	Tank		Amer. C. & F. Co.
Truffin & Co.	8	Tank		Amer. C. & F. Co.
Tuxbury Lbr. Co.	25	Log	30,000	Russell.
Union Pacific.	*1,250	Box	100,000	Pressed Steel.
	*200	Flat	100,000	Standard.
	*100	Hopper	100,000	Cambria.
	*100	Hart	100,000	Rodger Ballast.
	10	Caboose		Pullman.
Union R. R.	500	Hopper	100,000	Pressed Steel.
Union Tank Line.	180	Tank	60,000	Co. Shops.
	1,000	Tank		Co. Shops.
Un. Ver. & Pac. Ry.	20	Flat	50,000	Pullman.
United Zinc & Chem. Co.	*10	Tank	5,750 g.	Bettendorf.
	3	Tank	60,000	Bettendorf.
Vance Lbr. Co.	1	Flat	50,000	Hicks L. & C. Wks.
Vandalia	*150	Box	100,000	Pressed Steel.
	*50	Flat	100,000	Pressed Steel.
	*85	Gondola	100,000	Standard.
	100	Hopper		Inter-State.
Vicks. Shrev. & Pa.	163	Box	60,000	Amer. C. & F. Co.
	35	Flat	80,000	Amer. C. & F. Co.
	50	Coal	80,000	Amer. C. & F. Co.
Vict. Fisher & W.	30	Log	60,000	Marshall.
	1	Caboose		Amer. C. & F. Co.
Va. & Southwest.	750	Gondola	80,000	Western Steel.
	250	Box	60,000	Amer. C. & F. Co.
Wabash	2,000	Box	80,000	Amer. C. & F. Co.
	*2,000	Gondola	100,000	Western Steel.
	*2,000	Hopper	100,000	Cambria.
	*2,000	Hopper	100,000	Standard.
	1,000	Box	80,000	Pullman.
	1,000	Box	80,000	Amer. C. & F. Co.
Wash. Fert. Co.	1	Garbage		Amer. C. & F. Co.
Wash. Idaho & Mont.	150	Flat	80,000	Amer. C. & F. Co.
	4	Box		Co. Shops.
Wash. Timb. & Lbr. Co.	2	Flat	50,000	Hicks L. & C. Wks.
Watson John R.	*10	Gondola	80,000	Middletown.
War. & Ouichita V.	3	Caboose		Amer. C. & F. Co.
Waverly Oil Wks.	1	Tank		Amer. C. & F. Co.
Western Allegheny	15	Flat		Erie Car Wks.
	10	Gondola		Erie Car Wks.
Western Chem. Mfg. Co.	2	Tank	5,500 g.	Bettendorf.
	3	Flat	60,000	Fitz-Hugh, Luther.
Western Maryland	50	Hart		Rodger Ballast.
	*700	Hopper	100,000	Pressed Steel.
	30	Caboose		So. Baltimore.
	9	Caboose		Co. Shops.
Western Pacific.	500	Flat	80,000	D & R G Shops.
	500	Flat	80,000	Amer. C. & F. Co.
	500	Hart	80,000	Rodger Ballast.
	10	Tank	80,000	Amer. C. & F. Co.
	6	Caboose		Amer. C. & F. Co.
Western Wheel. Scrap. Co.	15	Flat	60,000	Fitz-Hugh, Luther.
W. Va. Pulp & Pa.	6	Flat	100,000	Pressed Steel.
W. & Lake Erie.	*2,000	Gondola	100,000	Standard.
White Oak.	3	Gondola	100,000	Ralston.
White R. Lbr. Co.	10	Flat	80,000	Seattle Car Mfg.
White Star Lbr. Co.	4	Flat	50,000	Hicks L. & C. Wks.
Williams Coop. Co.	10	Flat		Amer. C. & F. Co.
Winnipeg City.	6	Hart	80,000	Dominion Dump.
Wisconsin & Nor.	15	Flat	80,000	Fitz-Hugh Luther.
Wisconsin Cent.	200	Box	60,000	Haskell & Barker.
Wright Stacey E.	2	Log	60,000	Lima.
Yellow Pop. Lb. Co.	15	Flat		Amer. C. & F. Co.
Yngenio Gomez.	80	Flat	50,000	Fitz-Hugh, Luther.
Yosemite Valley.	12	Flat	60,000	Fitz-Hugh Luther.
	6	Box	60,000	Fitz-Hugh Luther.
	3	Stock	60,000	Fitz-Hugh Luther.
	6	Hart	80,000	Rodger Ballast.
Zuni Mt. R. R.	28	Flat	60,000	Fitz-Hugh, Luther.
	20	Flat	50,000	Fitz-Hugh, Luther.
Total Freight Cars	310,805			

PASSENGER CARS ORDERED IN 1906.

Purchaser.	No.	Kind.	Builder.
Alabama & Vicksburg	2	Coach	Barney & Smith
Ala. Great Southern	4	Coach	Amer. Pal. Car Co.
	2	Baggage	Am. C. & F. Co.
Alb. Ry. & Irri. Co.	1	Private	Can. Pac. shops
American Sm. & Ref. Co.	1	Coach	Harlan & Holl.
Ann Arbor	2	Mail & Pass.	Co's Shops
	2	Private	St. Louis
Atch. Top. & Santa Fe	2	Cafe	Pullman
	1	Coach	Pullman
	80	Baggage	Am. C. & F. Co.
	1	Private	Pullman
	20	Coach	Pullman
	20	Smoking	Pullman
	20	Chair	Pullman
	5	Postal	Am. C. & F. Co.
	17	Baggage	Am. C. & F. Co.
	1	Parlor	Pullman
Atlanta & West Point	2	Coach	St. Louis
	1	Coach & Bagg.	St. Louis
	1	Dining	Louis
Atl. Birm. & Atlantic	22		Am. C. & F. Co.
	3		Hicks L. & C. Wks.
Atl. Coast Line	40	Coach	Hicks, Harlan & Holl.
	6	Express	Hicks L. & C. Wks.
	2	Postal	Hicks L. & C. Wks.
	4	Mail & Exp.	Hicks L. & C. Wks.
Baltimore & Ohio	3	Cafe Parlor	Pullman
	1	Official	Co's Shops
Bangor & Aroostook	5	Conches	Am. C. & F. Co.
	8	Smoking	Am. C. & F. Co.
	2	Sm. & Coach	Am. C. & F. Co.
	2	Bag. & Mail	Am. C. & F. Co.
	4	Baggage	Am. C. & F. Co.
Bessemer & Lake Erie	8	Coach	Hicks L. & C. Wks.
Boston & Albany	5	Baggage	Co's Shops
Boston & Me.	6	Cafe	Pullman
	30	Coach	Pullman
	12	Bagg	Laconia
	6	Comb.	Co's shops
	2	Bagg. & Mail	Co's shops
	1	Mail	Co's shops
	5	Milk	Co's shops
	20	Coach Vest.	Pullman
	30	Coach	Pullman
	6	Parlor	Pullman
	6	Dining	Pullman
Brinson Ry.	2	Coach	Barney & Smith
	2	Pass., B. & M.	Barney & Smith
Buffalo & Susquehanna	2	Comb.	Barney & Smith
	2	Comb.	Am. C. & F. Co.
	4	Coach	Am. C. & F. Co.
Buff. Roch. & Pitts.	1	Private	Pullman
Canadian No.	6	Colonist	Rhodes, Curry
	2	1st-class Coach	Rhodes, Curry
	10	1st-class Coach	Rhodes, Curry
	6	Baggage	Rhodes, Curry
	6	Bagg., M. & Exp.	Rhodes, Curry
	6	1st-class Coach	Crossen
	5	Mail & Exp.	Crossen
	4	Pal. Cars	Amer. Pal. Car Co.
	8	Sleeping	Barney & Smith
	2	Dining	Barney & Smith
	4	1st-class Coach	Harlan & Holl.
	2	Parlor	Barney & Smith
Canadian Pacific	27	Sleeping	Co.'s Shops
	2	Parlor	Co.'s Shops
	10	Dining	Co.'s Shops
	1	Official	Co.'s Shops
	86	Coach	Co.'s Shops
	30	Suburban	Co.'s Shops
	4	Tourist	Co.'s Shops
	22	Colonist	Co.'s Shops
	16	Baggage	Co.'s Shops
	11	Bagg. & Sm.	Co.'s Shops
	23	Bagg. & Ex.	Co.'s Shops
	25	Box Bagg.	Co.'s Shops
	1	Lunch Counter	Co.'s Shops
	1	Mail & Ex.	Co.'s Shops
	1	Air Brake Instr.	Co.'s Shops
	1	Motor	Co.'s Shops
	1	Observation	Co.'s Shops
Can. Yaqui R. & Pac.	8	Coach	St. Louis
	2	Mail & Baggage	St. Louis
	2	Baggage	Harlan & Holl.
Central New England	6	Coach	Wason
	2	Bag. & Pass.	Wason
	4	Milk	Wason
Central Pacific	20	Coach	St. Louis
	10	Baggage	Harlan & Holl.
	5	Dining	Pullman
Cent. of N. J.	5	Combination	Harlan & Holl.
	15	Coach	Harlan & Holl.
	5	Baggage	Harlan & Holl.
	5	Baggage	Co.'s Shops
	1	Air Brake Instr.	Co.'s Shops
Central Vermont	1	Baggage	Co.'s Shops
	1	Mail	Co.'s Shops
Charlotte Harbor & No.	1	Coach	Barney & Smith
	1	Pass. & Bagg.	Barney & Smith
Chesapeake & Ohio	5	Dining	Pullman
	4	Parlor	Pullman
	20	Coach	Pullman
	4	Comb.	Pullman
	6	Bagg. & Exp.	Pullman
	1	Postal	Pullman
	3	Buffet & Bagg.	Pullman
	3	Chair	Pullman
Chicago & Northwestern	25	Coach	Pullman
	10	Baggage	Pullman
	10	Bagg. & Pass.	Pullman
	4	Dining	Pullman
	2	Parlor	Pullman
	4	Observation	Pullman
	10	Chair	Pullman
	10	Coach	Pullman
Chi. Burl. & Quincy	4	Dining	Pullman

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PASSENGER CARS ORDERED IN 1906—Continued.

Purchaser.	No	Kind.	Builder.
Chi. Indianapolis & Louis.	1	Postal	Co.'s Shops
	2	Bagg. & Sm	Am. C. & F. Co.
	2	Postal	Am. C. & F. Co.
Chicago Ind. & So.	6	Coach	Pullman
	2	Pass. & Bagg	Pullman
	2	Baggage	Co. Shops
Chi. Mil. & St. P	6	Postal	Co.'s Shops
	8	Sleeping	Pullman
	3	Parlor	Pullman
	50	Coach	Barney & Smith
	3	Dining	Barney & Smith
	10	Baggage	Co.'s Shops
	3	Mail & Bagg	Co.'s Shops
	6	Postal	Co.'s Shops
	1	Mail, Bagg & Ex	Co.'s Shops
Chi. R. I. & Pac.	5	Postal	Am. C. & F. Co.
	5	Dining	Pullman
	5	Obs. Library	Pullman
	10	Baggage	Am. C. & F. Co.
	10	Bagg. & Sm	Am. C. & F.Co.
	10	Chair	Am. C. & F. Co.
	10	Coach	Am. C. & F. Co.
	5	Coach, Din	Pullman Co.
	5	Bagg. & Mail	Am. C. & F. Co.
	6	Postal	Am. C. & F. Co.
	6	Sm. & Bagg	Am. C. & F. Co.
	9	Baggage	Am. C. & F. Co.
	20	Coach	Am. C. & F. Co.
	6	Bagg. & Mail	Am. C. & F. Co.
	1	Dining	Pullman
	5	Observation	Pullman
	9	Coach	Pullman
Chi. St. P. M. & O.	1	3d-class Coach	Barney & Smith
Chih. & Pacific	1	Bagg. & Mail	Barney & Smith
	1	Private	Am. C. & F. Co.
Cin. N. O. & Texas Pac.	8	Coach	Am. C. & F. Co.
	4	Baggage	Am. C. & F. Co.
	2	Cafe	Barney & Smith
Clev. Ak. & Col.	6	Coach	Pullman
C. C. C. & St. Louis	6	Horse Exp	Barney & Smith
Coah. Zacatecas	1	Bagg. & Mail	Hicks L. & C. Wks.
Colo. & So.	9	Coach	Pullman
	4	Pass. & Mail	Pullman
Colorado Midland	3	Dining	Co.'s Shops
Colo. So. N. O. & Pac.	4	Bagg. & Exp	Pullman
	4	Bagg. Mail & Exp	Pullman
Cumberland Valley	12	Coach	Pullman
	2	Mail & Bagg	Penna. Shops
	6	Coach	Penna. Shops
	2	Coach	Co.'s Shops
Delaware & Hudson Co.	20	Coach	Amer. C. & F. Co.
	6	Coach	Barney & Smith
	3	Horse	Amer. C. & F. Co.
	3	Baggage	Amer. C. & F. Co.
	1	Cafe	Barney & Smith
Denver & Rio Grande	9	Coach	Barney & Smith
	4	Dining	Barney & Smith
	5	Chair	Barney & Smith
Denver N. W. & Pac.	1	Private	Pullman
Duluth & Iron Range	1	Observation	Barney & Smith
	2	Coach	Barney & Smith
Duluth-& No. Minn.	1	Coach	Am. C. & F. Co
	1	Private	Barney & Smith
Dul. Missa. & No.	1	Coach	Barney & Smith
	1	Cafe	Barney & Smith
Dul. S. S. & Atlantic	2	Sleeping	Barney & Smith
El Paso & S. W.	1	Dining	Pullman
	1	Cafe	Pullman
	1	Postal	Pullman
	2	Bagg.	Pullman
	2	Chair	Pullman
	1	Obser. Smok	Pullman
Erie	25	Coach	St. Louis
	10	Horse Exp	Co.'s shops
	5	Refrig. Exp	Pullman
	6	Elec. Motor	St. Louis
	1	Gnaz Motor (steam)	Barney & S.
	1	Motor Car	Union Pacific
	17	60-ft. Exp. Carr	Barney & Smith
	6	Milk	Co.'s shops
Ft. Worth & Denv. City	4	Bagg. & Exp	Pullman Co.
	12	Coach	Pullman Co.
Galt Prest. & Hesp.	1	Coach	Ottawa
Gal. Harr. & San Antonio.	15	Coach	St. Louis
Georgia	4	Coach	Pullman
	3	Bagg. & Pass	Pullman
	3	Bagg.	Pullman
Ga. Fla. & Alabama	1	Private	Hicks L. & C. Wks.
Ga. Southern & Fla.	2	Coach	Barney & Smith
	3	Express	Barney & Smith
Grand Rapids & Ind.	8	Coach	Penna. Shops
Grand Trunk	14	Bagg.	Co.'s shops
	3	Par. Buffet	Co.'s shops
	250		Canada Car Co.
Great Northern	10	Mail & Bagg	Amer. C. & F. Co.
	10	Bagg	Amer. C. & F. Co.
	8	Mail & Bagg	Amer. C. & F. Co.
	25	Coach	Pullman
	10	Sleeping	Pullman
	27	2d-class Coach	Barney & Smith
	7	Dining	Barney & Smith
Gr. Bay & West.	1	Pass. & Bagg	Hicks L. & C. Wks.
Greene Cons. Copper Co.	1	Private	Pullman
Hocking Valley	1	Baggage	Pullman
	1	Bagg. Mail & Exp	Pullman
	1	Parlor Observation	Pullman
	5	Coach	Pullman
Hudson Companies	40	Coach	Amer. C. & F. Co.
	10	Coach	Pressed Steel
Illinois Central	1	Private	Pullman
	20	Coach	Pullman
	70	Baggage	Pullman

Purchaser.	No.	Kind.	Builder.
	8	Mail & Baggage	Pullman
	5	Chair	Pullman
	2	Mail	Pullman
	2	Baggage	Co.'s Shops
	1	Bagg. & Smoker	Co.'s Shops
Ill. Iowa & Minn.	1	Coach	Hicks L. & C. Wks.
	1	Combination	Hicks L. & C. Wks.
Intercolonial	5	2d Class Sleep'g & Bagg.	Crossen
	1	Dining	Pullman
	2	Postal	Rhodes, Curry
Int. & Gt. Northern	1	Mail	Co.'s Shops
	1	Pass. & Mail	Co.'s Shops
Interstate	1	Coach	Am. C. & F. Co.
Jonesb., La. Uy. & East.	1	Coach	Hicks L. & C. Wks.
Kanawha & Michigan	3	Coach	Pullman
Kanawha & W. Va.	3	Coach	Hicks L. & C. Wks.
Kansas Fish Comm.	1	Exhibit	Hicks L. & C. Wks.
Lake Erie & Western	17	Coach	Pullman
	8	Smoking	Pullman
	6	Baggage	Lake Shore Shops
Lake Shore & Mich. So.	25	Coach	Pullman
Las Vegas & Tonopah.	2	Combination	Hicks L. & C. Wks.
	3	Chair	Pullman
	3	Pass., Bagg. & Mail	Pullman
Lehigh Valley	1	Dining	Harlan & Holl.
	10	Express	Harlan & Holl.
Liberty-White	1	Combination	Co.'s Shops
Long Island	2	Vest. Coaches	Penn. R. R. Shops
Louisiana & Arkansas	1	Bagg. & Mail	Barney & Smith
	2	Coach	Hicks L. & C. Wks.
	1	Pay Car	Hicks L. & C. Wks.
	1	Private	Barney & Smith
	2	Coach	Barney & Smith
	2	Coach	Barney & Smith
	1	Bagg. & Mail	Barney & Smith
Louisiana Western	5	Coach	St. Louis
	3	Dining	Pullman
Louisv. & Nash.	15	Coach	Co.'s shops
	4	Coach & Bagg	Co.'s shops
	4	Baggage	Co.'s shops
	4	Bagg. & Mail	Co.'s shops
	1	Postal	Co.'s shops
	5	Coach	Am. C. & F. Co.
	4	Spec. Sleeping	Barney & Smith
	3	Sleeping	Barney & Smith
	2	Dining	Barney & Smith
	8	Coach	Barney & Smith
Louis. Hend. & St. Louis	1	Combination	Hicks L. & C. Wks.
Mackenzie-Mann System	1	Coach	Hicks L. & C. Wks.
	1	Dining	Pullman
	2	Bagg. & Mail	Pullman
	2	Dining	Pullman
Manitou & Pike's Peak	1	Observation	Am. Car Co.
Maricopa & Phoenix	1	Baggage	Harlan & Holl.
Marquette & S. E.	2	Coach	Hicks L. & C. Wks.
	2	B. M. & Pass.	Hicks L. & C. Wks.
Maryland & Penna.	2	Coach	Am. C. & F. Co.
	2	Baggage	Co.'s Shops
Mexican	2	Coach	Co.'s shops
Mexican Central	4	Bagg Mail & Ex.	Barney & Smith
	11	Express	Barney & Smith
	6	1st Class Coach	Pullman
	4	2nd Class Coach	Pullman
	3	3rd Class Coach	Pullman
Mexican Southern	2	Baggage	Mexican C. & F. Co.
	3	Coach	Mexican C. & F. Co.
Michigan Central	2	Official	Co. Shops
	1	Buffet	Co. Shops
	8	Sm. & Bagg	Pullman
	6	Smoking	Barney & Smith
	6	Coach	Amer. C. & F. Co.
	6	Chair	Amer. C. & F. Co.
	3	Mail & Bagg	Amer. C. & E. Co.
	14	Private	Pullman
	1	Cafe	Pullman
	2	Baggage	Barney & Smith
	13	Bagg. & Mail	Barney & Smith
	19	2nd Class Coach	Barney & Smith
	4	1st Class Coach	Barney & Smith
	3	Pass. & Bag	Barney & Smith
	3	Postal	Barney & Smith
	1	Bagg. & Buffet	Barney & Smith
	8	Tourist Sleepers	Barney & Smith
	8	Sleeper	Barney & Smith
	2	Dining	Barney & Smith
	4	Observation	Barney & Smith
Minn. St. P. & S. Ste. Marie.	2	Bagg. & Mail	Barney & Smith
	2	Comp. Coach	Barney & Smith
	2	Coach	Barney & Smith
Mississippi Central	1	Private	Amer. C. & F. Co.
	14	Chair	Amer. C. & F. Co.
	12	Baggage	Amer. C. & F. Co.
	8	Postal	Amer. C. & F. Co.
	6	Coach	Amer. C. & F. Co.
	2	Coach & Mail	Amer. C. & F. Co.
	1	Coach & Bagg	Amer. C. & F. Co.
	1	Coach	Barney & Smith
Mo. Okla & Gulf.	10	Coach	Am. C. & F. Co.
Mobile & Ohio	1	1st-class Coach	Pullman
Morelia & Tacambaro	1	2d-class Coach	Pullman
	2	3d-class Coach	Pullman
	1	Mail, Bagg. & Exp	Pullman
Morgan's La. & Texas	5	Coach	St. Louis
	1	Dining	Pullman
Munising	2	Bag. & Pass.	Hicks L. & C. Wks.
Nash. Chatt. & St. Louis	4	Coach	Pullman
	2	Pass. & Bagg	Pullman
	1	Bagg. & Mail	Co.'s Shops
Natch. Col. & Mob.	1	Baggage	Co.'s shops
National of Mexico	3	1st Class Coach	Pullman
	2	2nd Class Coach	Pullman
	3	3rd Class Coach	Pullman

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RAILROAD GAZETTE
DEC 21 06.

Robert E. Slagle, for the past three years assistant district superintendent of the Pullman Company at Kansas City, Mo., has gone, as half owner, to the Acme Supply Co., 100 Lake street, Chicago.

The Chicago Great Western has ordered 300 box cars of 70,000 lbs. capacity from the Pullman Company. These cars will weigh 36,000 lbs. and will measure 36 ft. long, 8 ft. 6 in. wide and 8 ft. high, all inside measurements. The special equipment includes:

Brakes	Westinghouse
Couplers	Janney
Doors	Security
Roofs	Chicago
Trucks	Barber
Wheels	Griffin

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PASSENGER CARS ORDERED IN 1906—Continued.

Purchaser.	No.	Kind.	Builder.
Nevada Nor.	5	Bagg., Mail & Exp.	Pullman
New Orleans Gt Northern	1	Baggage	Harlan & Holl.
	6	Coach	Am. C. & F. Co
	2	Combination	Am. C. & F. Co.
N. Y. Cent. & H. R.	1	Buffet	Pullman
	15	Coach	Co. Shops
	2	Buffet	Co. Shops
	2	Dining	Co. Shops
	15	Baggage	Co. Shops
	30	Milk	Co. Shops
	12	Bagg. & Mail	Wason
	1	Sm. & Bagg.	Co. Shops
	5	Postal	Co. Shops
	2	Bagg. & Mail	Co. Shops
	1	Baggage	Co. Shops
N. Y. N. H. & Hartford	100	Coach, Sm. & Bagg.	Bradley
	16	Parlor	Pullman
	4	Observation	Pullman
	4	Parlor & Bagg.	Pullman
	4	Dr. Room Parlor	Pullman
	4	Sm. Room Parlor	Pullman
	4	Sleeping	Pullman
	2	Dining	Pullman
N. Y. Ontario & West.	12	Coach	Harlan & Holl.
	2	Bagg.	Harlan & Holl.
Norfolk & Southern	6	Coach	Harlan & Holl.
	6	Baggage	Harlan & Holl.
	2	Mail & Exp.	Harlan & Holl.
	3	Mail & Exp.	Am. C. & F. Co.
	9	Conches	American C. & F.
Norf. & Western	2	Postal	Pullman
	25	Coach	Hicks L. & C. Wks.
	4	Puss. & Bagg.	Harlan & Holl.
	10	Bagg. & Exp.	Hicks L. & C. Wks.
	1	Business	Co.'s shops
Northern Pac.	2	Postal	Barney & Smith
	2	Parlor	Barney & Smith
	6	Mail & Exp.	Barney & Smith
	6	Pass. & Bagg.	Barney & Smith
	10	Express	Barney & Smith
	10	Dining	Barney & Smith
	10	Tour. Sleeping	Barney & Smith
	50	Coach	Barney & Smith
	14	Assoc. Sleeping	Pullman
	1	Pass. & Bagg.	Pullman
	4	Coach	Pullman
Oklahoma Central	3	Coach	Amer. C. & F. Co.
	2	Bagg.	Amer. C. & F. Co.
Opelousas G. & N. E.	2	Postal	Pullman
Oregon & California	2	Mail & Bagg.	St. Louis
	2	Baggage	Harlan & Holl.
	2	Postal	Pullman
Ore. & Cal.	2	Mail & Bagg.	St. Louis
	2	Baggage	Harlan & Holl.
Oregon R. & Nav. Co.	10	Coach	St. Louis
	3	Mail & Bagg.	St. Louis
	3	Baggage	Harlan & Holl.
Oregon Short Line	5	Coach	St. Louis
	5	Chair	St. Louis
	5	Mail & Baggage	St. Louis
	6	Baggage	Harlan & Holl.
	2	Dining	Pullman
	15	Coach	Barney & Smith
	3	1st Class Coach	Am. C. & F. Co.
	10	2nd Class Coach	Am. C. & F. Co.
	4	Bagg. & Mail	Am. C. & F. Co.
Pennsylvania	30	Pass. & Baggage	Co.'s shops
	2	Coach (steel)	Co.'s shops
	7	Dining	Co.'s shops
	1	Dining (steel)	Co.'s shops
	59	Bagg. & Exp.	Co.'s shops
	3	Bagg. (steel)	Co.'s shops
	2	Postal	Co.'s shops
	1	Postal (steel)	Co.'s shops.
Pennsylvania Lines West	75	Pass. & Bagg.	Co.'s shops
	16	Pass. & Bagg.	Co.'s shops
	3	Postal	Co.'s shops
	10	Couches	Pullman
	2	Dining	Pullman
	2	Cafe	Pullman

Purchaser.	No.	Kind.	Builder.
Phila. & Reading	10	Baggage	Co. Shops
Pittsb. & Lake Erie	1	Private	Pullman
Pont. Ox. & No.	2	Coach	Amer. C. & F. Co.
Prescott & N. W.	1	Bagg. & Pass.	Hicks L. & C. Wks.
Raleigh & Southport	1	Mail, Bagg. & Ex.	Am. C. & F. Co.
	2	Coach	Am. C. & F. Co.
Rich. Fred. & Pot.	1	Cafe	Pullman
	6	Coach	Amer. C. & F. Co.
Rutland	1	Bagg. & Mail	Co. Shops
St. Louis & S. F.	8	Postal	Pullman
	10	Chair	Pullman
	6	Pass. & Mail	Pullman
	1	Bagg., Mail & Exp.	Pullman
St. L. R. Mt. & Pac.	1	Coach	Am. C. & F. Co.
	2	Combination	Am. C. & F. Co.
San Diego, Cuy. & Eastern	1	Observation	Co.'s Shops
S. P. Los Angeles & S. L.	3	Dining	Pullman
Seaboard Air Line	23	Coach	Barney & Smith
	5	Dining	Barney & Smith
	2	Pass. & Bagg.	Barney & Smith
	6	Mail & Bag.	Barney & Smith
	1	Postal	Barney & Smith
	5	Express	Am. C. & F. Co.
South & Western	1	Combination	Hicks L. & C. Wks.
Southern Pacific	15	Chair	Barney & Smith
	15	Baggage	Barney & Smith
	4	Observation Smoker	Pullman
	35	Coach	St. Louis
	5	Baggage	Harlan & Holl.
	5	Dining	Pullman
Southern R.	25	Bagg. & Exp.	Amer. C. & F. Co.
	10	Postal	Amer. C. & F. Co.
	6	Pass. & Bagg.	Amer. C. & F. Co.
	4	Bagg., Mail & Exp.	Am.C. & F. Co.
So. Ga. & West Coast	1	Coach	Barney & Smith
	1	Pass. & M.	Barney & Smith
Spokane International	6	Coach	Wason
	3	Bag. & Exp.	Wason
Staten Isl. R. Tr. Ry.	10	Coach	Wason
	3	Combination	Wason
Tacoma Eastern	1	Observation	Co.'s Shops
Temiskaming & No. Ont.	8	1st Class Coach	Crossen
	1	Bagg. & Exp.	Crossen
	5	2nd Class Coach	Rhodes Curry
Texas & New Orleans	1	Dining	Pullman
Texas & Pacific	6	Coach	Co. Shops
	1	Bagg. & Exp.	Co. Shops
	1	Postal	Co. Shops
Texas Central	1	Coach	Hicks L. & C. Wks.
Tidewater	1	Private	Pullman
	5	Coach	Pullman
	1	Pass. & Bagg.	Pullman
	3	Baggage	Pullman
Toledo & Ohio Cent.	3	Cafe Coach	Pullman
	4	Coach	Pullman
Tonopah & Goldfield	2	Baggage	Pullman Co.
	2	Mail & Exp.	Pullman Co.
	3	Coach	Pullman Co.
	1	Chair	Pullman Co.
	1	Pass. & Bagg.	Pullman Co.
Trinity & Braz. Val.	5	Coach	Mex. C. & F. Co.
	5	Comp. Coach	Pullman
	5	Bagg. & Mail	Pullman
	6	Postal	Pullman
Unicn Pacific	15	Coach	St. Louis
	3	Dining	Pullman
	10	Motor	Co.'s Shops
Vera Cruz & Pac.	1	Private	Mex. C. & F. Co.
Vicks. Shrev. & Pacific	1	Coach	Barney & Smith
Virginia & Southwestern	2	Coach	Am. C. & F. Co.
	1	Mail, Bag. & Ex.	Am. C. & F. Co.
Wells Fargo & Co.	10	Refr. Exp.	Am. C. & F. Co.
Western Maryland	2	Mail & Exp.	Pullman
	1	Parlor	Pullman
	4	Pass. & Bag.	Pullman
	3	Coach	Pullman
Western Union Tel. Co.	1	Private	Hicks L. & C. Wks.

Total Passenger Cars.....3,402

LOCOMOTIVE EQUIPMENT ORDERED IN 1906.

*Asterisk indicates compound.

Purchaser.	No.	Cylinders.	Weight.	Type.	Builder.
Akron & Barberton.	1	20x24	132,700	2-6-0	Baldwin
Ala. & Vicksburg.	6	19x26	146,000	4-6-0	Baldwin
Ala. Con. Cl. & Iron.	1			0-6-0	American
	1				Baldwin
Alabama Great So.	3				American
	4		200,000		American
	6	23x32	200,000	2-8-0	American
	2	22x28	218,000	4-6-2	American
	2	22x28	218,000	4-6-2	American
	5	19x26	145,000	0-6-0	American
	1		122,260	Pass.	Baldwin
Alger Logging Co.	1				Baldwin
Am. Agr. Chem. Co.	1				Baldwin
Am. Bridge Co.	1				Baldwin
Am. Lumber Co.	1		130,000	Shay	Lima
Am. Sheet & Tin Plate Co.	2				Baldwin
Am. Sm. & Ref. Co.	1	12x16	47,000	Sad. tank	H. K. Porter
	1	7x12	34,000	Shay	Lima
	2	20x24		0-6-0	Baldwin
	1	20x26		0-6-0	American
	1	11x14	50,000		H. K. Porter
	1	20x26	150,000	4-6-0	American
	1	19x26	185,000	0-8-0	American

Purchaser.	No.	Cylinders.	Weight.	Type.	Builder.
	1	20x26		0-6-0	American
	1		225,000	0-8-0	American
	1		252,000		American
	1		211,000	2-6-0	American
Am. Steel & Wire.	1				Baldwin
	1				American
	1				H. K. Porter
	2				Baldwin
Am. Trading Co.	2				Baldwin
Amsinck & Co.	2				Baldwin
Arkansas Val.	2	19x24		2-6-0	American
A. T. & Santa Fe.	56			2-6-2	Baldwin
	*22	19x32x32		2-10-2	Baldwin
Atl. & West Point.	1	19x24	117,000	0-6-0	Rogers
	2	21x28	180,000	Freight	Rogers
	2	21x28	193,000	Pass.	Rogers
Atl. Birm. & Atl.	16			1-6-0	Baldwin
	25				Baldwin
Atl. Coast Line.	30	19x24	110,000	0-6-0	Baldwin
	27	20x26	155,000	4-6-0	Baldwin
Bangor & Aroos.	3	20x26	146,000	1-6-0	American
	2	19x26	132,000	1-6-0	American
Bay de Noquet Lumber Co.	1	16x24	88,000	1-6-0	Baldwin
Beau. & Great Nor.	1		56,000	Shay	Lima

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LOCOMOTIVE EQUIPMENT ORDERED IN 1906—Continued.

*Asterisk indicates compound.

Purchaser.	No.	Cylinders.	Weight.	Type.	Builder.
Bell Log. Co.	1		54,000	Shay	Lima
Benson Log & Lb.	2	16x24	74,900	Shay	Lima
	2	10x12	126,000	2-6-2	Baldwin
Bering Mfg. Co.	1		74,000	Shay	Lima
Berlin & Winfield.	1		74,000	Shay	Lima
Berlin Mills Co.					Baldwin
Bess. & Lake Erie.	6	22x26	175,000	2-8-0	Baldwin
Beth. Steel Co.	5				American
	4				H. K. Porter
Birm. Southern.	1				American
Black Band C. & C.					Baldwin
Blind Riv. Transp.	1				Baldwin
Blue Ridge.	2	19x26	56,000	Shay	Lima
Boston & Albany.	10	23x32	220,200	2-8-0	American
	2	22x26	215,000	4-6-2	American
	10	22x26	194,500	4-6-0	American
Boston & Me.	27	19x26	142,400	2-6-0	American
	20	20x30	170,000	2-8-0	American
	25	19x24	114,000	0-6-0	American
	10	19x28	156,000	4-4-0	American
Bos. Con. Min. Co.	9	10x12	36,000	Cont.	H. K. Porter
	2	22x16	48,000	Cont.	H. K. Porter
	1		180,000	Shay	Lima
Boyne Cy. Chem. Co.	1	12x16			H. K. Porter
Boyne Cy. Gayl. & Al. R.	1	18x22	130,000	4-4-2	Baldwin
Brims. Ry. & Can. Co	1				American
Brinson Ry.	3				Baldwin
Britton Lbr. Co.	1				Baldwin
Brock. West. & N. W.	1	17x24	55,000	4-4-0	Loco & M. Co.
Buff. & Susq.	6	21x28			American
	3	21x28		2-8-0	American
	5	22x28		2-8-0	American
Buff. Att. & Arc.	2				American
Buffalo Creek	1	20x24	125,000	0-6-0	American
Buff. Roch. & Pitts.	4	20½x26	173,000	4-4-2	American
	6	21x28	186,000	2-8-0	American
	14	21x28	184,000	2-8-0	American
	6	24x28	275,000	2-10-0	American
Burr's F. Br. & Chester	1		74,000	Shay	Lima
	1		90,000	Shay	Lima
Bush Term. Co.	1				American
Butte Ana. & Pac.	*2	23x34x32	327,500	4-8-0	American
	2	21x28	289,000	2-8-0	American
Caddo R. Lbr. Co.	1		74,000	Shay	Lima
Cairo & Kanawha.	1		46,000		Climax
Cambria St. Co.	1				H. K. Porter
Canada Car Co.	1	14x22	60,500	0-6-0	Loco. & M. Co.
Canadian Northern.	15	21x24	135,000	4-6-0	Can. Loco. Co.
	15	21x26	170,000	2-8-0	Can. Loco. Co.
	10	20x26	157,000	4-6-0	Loco. & M. Co.
	15	21x26	170,000	2-8-0	Loco. & M. Co.
	20			2-8-0	Loco. & M. Co.
Canadian Pac.	20	21x28		2-8-0	Canada Car Co.
	20	21x28	186,000	Freight	Co. Shops
	23	21x24	214,000	Pass.	Co. Shops
	13	18x26	126,000	0-6-0	Co. Shops
	2	23½x28	185,000	0-6-0	Co. Shops
	20	21x28	190,000	Freight	L. & M. Co.
	65	21x28	190,000	Mixed	L. & M. Co.
	25				American
	26				Baldwin
Cananea Cons. Copper Co.	1	16x20	110,000	Sad. tank	American
Carnegie Steel Co.	1				Baldwin
	1				American
Carolina & N.W.	1	17	310,000	Shay	Lima
Carolina Lumber & Mfg. Co.	1				Baldwin
Cent. N. Eng.	10	20x24	246,500	2-8-0	Baldwin
	2	20x24	204,000	0-6-0	Rogers
Cent. of Ga.	15	20x28	156,940	2-8-0	American
	10	22x30	197,750	2-8-0	Baldwin
	10	20x28	184,200	4-6-2	Baldwin
	5	30x26	145,800	0-6-0	Baldwin
Central Ont.	1	18x24	115,000	4-4-0	Can. Lo. Co.
Cent. Pac.	2	20x28	196,000	4-4-2	Baldwin
	2	22x28	222,000	4-6-2	Baldwin
	9	19x26	140,000	0-6-0	Baldwin
	15				Baldwin
Cent. of N. J.	1	17x24	102,000	0-4-0	Baldwin
Cent. Vermont	1		155,000	4-6-0	American
	*10	35x22½x32	203,000	2-8-0	American
Chaparra Sugar Co.	1				American
Chapman Tbr. Co.	1	16x24	108,000	2-6-0	Baldwin
	2		75,000	Shay	Lima
	1		90,000	Shay	Lima
Char. Harb. & No.	1	20x24		4-6-0	Baldwin
	1	18x24		2-8-0	Baldwin
Charleston Lbr. Co.					Baldwin
Ches. & Ohio.	1	21x28	165,000	0-8-0	Baldwin
	4	17x28	330,600	Shay	American
	77	22x28	186,228	2-8-0	Lima
	10	21x26	169,000	4-4-2	American
	12	22x28	190,000	4-6-2	American
	2	20x28	190,000	4-6-2	American
Chester & Lanc.	1	16x22	142,200	0-6-0	American
Chi. & Eastern Ill.	20	21x28	72,000	4-4-0	Baldwin
	4	21x26	175,000	2-8-0	Baldwin
	4	21x26	160,000	0-6-0	Baldwin
	1	21x26	183,500	4-4-2	Baldwin
Chi. & Ill. Western	22				American
Chicago & N. W.	10	20x26	158,000	4-4-2	American
	15	18x24	121,000	0-6-0	American
	60	21x26	162,500	4-6-0	American
Chic. & W. Ind.	10	20x26	142,000	0-6-0	American

Purchaser.	No.	Cylinders.	Weight.	Type.	Builder.
Chi. Burl. & Q.	100	22x28	216,000	2-6-2	American
	30	22x28	228,000	4-6-2	Baldwin
	50	22x28	216,000	2-6-2	Baldwin
	15	22x28	228,000	4-6-2	American
	10	20x24	122,500	0-6-0	Co.'s shops
Chi. Hghts. Term.	1			4-4-2	Baldwin
Chic. Ind. & L.	3	21x26	184,000	4-6-2	American
	2	21x28	188,000	2-8-0	American
	1	20x26	142,000	0-6-0	American
Chic. Ind. & So.	2	24x28	270,000	0-10-0	American
Chic. Junc.	5	20x28	142,500	0-6-0	American
Chic. Kal. & Sag.	1	17x24	95,000		Baldwin
Chi. L. S. & East.	10	19x26	130,000	0-6-0	American
	8	22x28	188,000	2-8-0	American
	6	19x26	130,000	0-6-0	American
Chic. L. S. & E.	10	19x26	130,000	0-6-0	American
	8			0-6-0	American
	6			0-6-0	American
Chic. Mil. & St. P.	25	20½x26	178,000	4-6-0	Co. Shop
	35	21x30	177,000	2-8-0	Co. Shop
	20	22x26		2-8-0	Co. Shop
	10	19x26		0-6-0	Co. Shop
	*5	15x25x28		Pass.	Co. Shop
	3	20x26	175,000	2-8-0	Rogers
	30	23x30	180,000	2-8-0	American
	20	19x26	140,000	0-6-0	Baldwin
	33	23x30	180,000	2-8-0	Baldwin
	*6	15x25x26		4-4-2	Baldwin
	2	22x26	136,000	4-6-2	American
	3	21x28	233,000	4-6-2	American
	10	21x26	310,700	4-6-2	American
	1	24x24	183,400	0-6-0	American
	1	19x26	125,000	0-6-0	Baldwin
	3				Rogers
	5	22x30	200,000	2-8-0	Baldwin
	2	19x26	145,000	Pass.	American
	25	22x30	200,000	2-8-0	Baldwin
	5	22x30	200,000	2-8-0	American
	4	22x28	218,000	4-6-2	American
	3	20x26	145,000	0-6-0	American
	1				Baldwin
	1	10x12	20,300	Shay	Lima
	1		74,000	Shay	Lima
	2				Lima
	2			Freight	American
	2			Passenger	Co.'s shops
	15	21x28	220,200	2-8-0	American
	55	23x32	252,500	0-6-0	American
	2	24x28	220,200	2-8-0	American
	7	17x20	270,000	0-10-0	American
	1		180,000	2-8-0	Baldwin
	1		100,000	2-8-0	American
	1	12x28	173,320		Baldwin
	22				Baldwin
Col. So. N. O. & P.	20	22x30			American
	6	19x26	180,000	2-8-0	Baldwin
	2	22x26	136,000	4-4-0	American
	3	19x26	182,000	4-6-0	American
	1	20x26	121,000	0-6-0	American
	1	18x24	148,000	0-6-0	American
	1		125,000	4-6-0	Baldwin
	1				Baldwin
	1		46,000	Shay	Lima
	1		60,000	Shay	Lima
	1	22x26	56,000	Shay	Lima
	1		166,000	2-8-0	American
	1		40,000	Shay	Lima
	2				Baldwin
	3		74,000	Shay	Lima
	3	23x28	192,000	2-8-0	Baldwin
	1	20x24	146,500	2-8-0	Co. Shops
	2	18½x26	121,500	4-6-0	Penn. Shops
	6	22x28	171,600	2-8-0	Penn. Shops
	1		66,000	Shay	Lima
	1		140,000	4-6-0	American
	1		34,000	Toledr	Stearns Co.
	44	21x30	178,000	2-8-0	American
	6	23½x30	217,000	2-8-0	American
	1	10x14	30,000	Shay	Davenport
	15	21x26	97,000	0-6-0	American
	6	19x24	172,000	4-6-0	American
	10	22½x26	138,000	0-6-0	American
	6	19x24	201,000	4-6-0	American
	40		131,700	0-6-0	American
	2	22x28		2-8-0	American
	1	20x28	187,000	2-8-0	American
	1	20x28	137,500	4-6-0	American
	3	22x28	86,000	2-6-2	Baldwin
	1	19x24	173,000	2-8-0	American
	1		110,000	2-6-0	Baldwin
	1		94,000	Alt.	Baldwin
	1	18x24	100,000	0-6-0	Loco. & M. Co.
	3		74,000	Shay	Lima
	3	22x28	195,000	2-8-0	Baldwin
	1				Baldwin
	2	19x26	124,000	4-4-2	American
	4	22x28	164,000	2-8-0	Baldwin
	1	21x28			American
	2	20x26	164,000	0-6-0	Baldwin
			164,000	2-8-0	Baldwin
Dul. Rainy L. & Winn.	1	12x15	12,000		Lima
	6				American
	1				H. K. Porter
D. S. S. & A.	1	16x20	170,000	2-8-0	Baldwin
E. Broad Top.	1	16x20	80,000		Baldwin
	1	17x24	150,000		Baldwin

14J

GARLAND VENTILATOR FOR PASSENGER CARS.

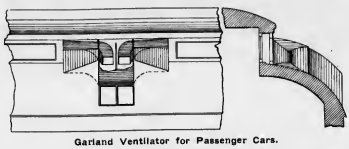
During the past year there has been considerable agitation on the subject of proper ventilation of passenger cars. Not only have railroads given the matter more attention than usual, but the government has taken up the subject and tests have been made by surgeons of the marine hospital service to determine the kind of germs or bacteria that may be found in railway cars.

That there is need for better ventilation of cars than is now provided, no one will deny. It is claimed that ventilation can be best obtained by exhausting or drawing out the impure air, rather than by forcing air from the outside into the cars, which latter method usually produces drafts.

The ventilator shown here is the invention of Thomas H. Garland, general agent refrigerator service, of the Burlington, and is the result of a long series of tests which have been made under the many varied conditions to which trains are subjected. The ventilator has been developed with a view of drawing out the impure air from passenger and sleeping cars and the heated air and gases from refrigerator cars loaded with fruits, berries, etc. The ventilator has been in service for the past two years, and it is reported that wherever used it has proved an effectual means of ventilating cars without the direct introduction of cold air. It is constructed upon the aspirator or injector principle. The small ends of flaring ducts are introduced into exhaust pipes leading from a deck window to the outer edge of the car, following the curve of the roof at a right angle with the length of the car. The ventilator is made double, to operate in both directions, and has no movable parts.

The theory of the device is as follows: The speed of the train causes the outside air to enter the forward duct and it is blown out at the side of the car through the exhaust pipe. In consequence there is induced a strong current of air from the inside of the car through the exhaust tubes. Smoke, cinders, rain, snow, etc., that may enter the ducts are carried through and discharged at the outer edge of the car, and cannot under any conditions enter the car through the deck window. There is, therefore, a constant suction of exhaust of the air from the car and no chance of air blowing into the car. It has not been found necessary to provide special openings for the introduction of fresh air, as the outside air will enter the car by the leakage about the windows and doors and through the frequently opened doors.

It is stated that anemometer tests show that when a train is running at 40 miles per hour each ventilator exhausts or draws out 18,000 cubic feet of air per hour. Ten ventilators are usually applied to each car, and the total amount of air taken out of the car increases as the speed of the train increases. At speeds of 40 to 50 miles per hour the air in a car is completely changed every three or four minutes.

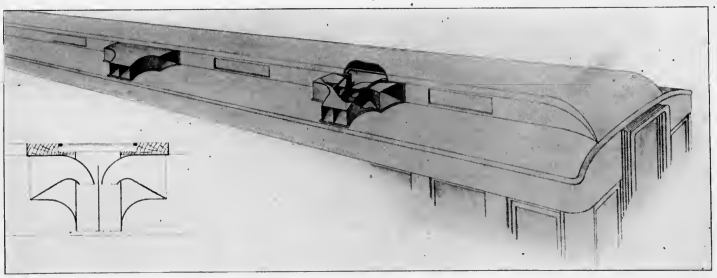


Garland Ventilator for Passenger Cars.

After making tests in various parts of the country, the Pullman Company is now applying this ventilator to its cars. It is on all cars in the Twentieth Century limited trains between Chicago and New York, on the Overland limited between Chicago and San Francisco and on many of the longer runs. A number of other railroads are testing the device. In crossing the deserts and in the warmer sections of the country the device is reported as being very effective in keeping the cars free from dust. Repeated tests show that cars equipped with this ventilator are several degrees cooler than other cars in the same train.

In the original work on this ventilator it was Mr. Garland's purpose to provide a better means of ventilating refrigerator cars carrying loads of fruit and berries. The heavy losses sustained by the railroads and dealers on account of fruit and berries decaying while in transit because of improper ventilation of cars prompted the effort to secure a better means of ventilation. A

Garland Ventilator, Applied to Pullman Cars.



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15

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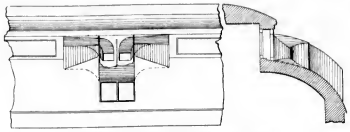

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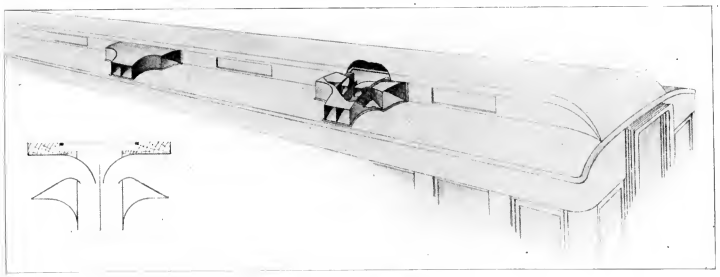

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number of refrigerator cars have been equipped with this ventilator, and from the trial shipments that have been made in cars so equipped it is believed that the desired results would be obtained. The loss on fruits and berries while in transit is due to the warm air and gases given off by the fruit which rise to the ceiling of the car and have no means of escape. The upper tier or tiers of the fruit become mouldy or partly decay and have to be sold at a much less price than the lower tiers. It not infrequently happens that the entire upper tier has to be dumped. By drawing off the heated air and gases the cold air from the ice chambers is permitted to replace the warm air drawn off, thus producing good refrigeration to the ceiling and throughout the entire car. The device was so successful for this purpose that it was applied to passenger cars.

TRADE PUBLICATIONS.

Nernst Lamp Company, Pittsburg, Pa.—An attractive little pamphlet describes the architecture of the New York terminal of the Pennsylvania and calls attention to the manner in which it is to be lighted.

Dayton Pneumatic Tool Company, Dayton, O.—A flat vest pocket lead pencil encased in celluloid with gold tipped ends and an eraser calls attention to the pneumatic hammers manufactured by this company.

Crandall Packing Company, Palmyra, N. Y.—A complete catalogue and price list of the improved steam, ammonia and hydraulic packings manufactured by this company is presented in an 80-page publication.

Allis-Chalmers Company, Milwaukee, Wis.—Bulletin No. 1503 describes Allis-Chalmers direct-connected Reynolds-Corliss engines with a number of engravings from photographs showing complete engines and various parts.

Cooper Hewitt Electric Company, New York.—A well-executed pamphlet, 7 by 10 inches, describes in some detail the conspicuous features of the Cooper Hewitt system of mercury vapor lamp lighting with illustrations showing its application in industrial uses.

American Steel & Wire Company, The Rookery, Chicago.—The October number of "American Wire Rope News" is a 12-page publication and presents information as to derrick rope calculations, splicing thimbles into wire rope and the proper way to attach clips to wire couplings.

Detroit Leather Specialty Company, Detroit, Mich.—This company manufactures the Sargent leather glove which is especially designed for use by locomotive enginemen and should be of service to other classes. A well printed pamphlet tells how the glove is made and shows various patterns.

L. S. Starrett Company, Athol, Mass.—A copy of the "Vicksburg American" containing an account of the manner in which a supposedly tool proof steel bar installed in the Warren county, Mississippi, jail was cut through in four hours by one of the company's No. 250, 16-inch hack saws.

General Fireproofing Company, Youngstown, Ohio.—This company manufactures a cold twisted lug bar for use in reinforcing concrete. One of its recent publications is a mailing card effectively showing the design of the bar and soliciting inquiries for further information from those interested.

Sprague Electric Company, New York.—Electric hoists and cranes are described in a 14-page leaflet with illustrations showing many combinations of its hoists, carriages and cranes. The pamphlet calls attention to Hoist Catalogue No. 220, which is a complete catalogue of the company's manufactures.

F. W. Bird & Son, East Walpole, Mass.—"First Expedition to Cuba" is the subject of a blotter in two colors which refers to a large order for Paroid roofing which has been received by the company to cover buildings at Newport News, Va., from which point the first expedition to Cuba recently started.

Newman Clock Company, Chicago.—As a souvenir of the recent street and interurban conventions at Columbus, this company is mailing a handsome halftone panorama view of the Ohio state fair buildings suitable for framing, accompanied by another engraving showing the company's booth at the conventions.

Abrasive Material Company, Philadelphia, Pa.—A substantial catalogue has been issued by this company for use during 1907. It presents information about the grinding wheels made by the company together with many useful tables for the machinist and drawings of various types of special wheels made by this company for industrial concerns.

National Machinery Company, Tiffin, Ohio.—Bulletin No. 30 is a handsomely printed pamphlet describing National wire nail machinery. The various types of machines are shown by halftone engravings from photographs and a concise table of specifications is presented in connection with each of these. A complete detailed description is also given.

General Electric Company, Schenectady, N. Y.—The power and mining department of this company has issued an elaborate bulletin No. 4468 which supersedes a previous publication No. 1045 dealing with electric mine locomotives. The publication comprises 56 pages and is handsomely illustrated with halftone engravings from photographs showing equipment of various types in service under varying conditions. Bulletin No. 4466 deals with remote control field rheostats for railway generators and rotary converters. Bulletin No. 4473 is descriptive of the GE-81 motor for railway service. The interest in railway motors warrants the complete description which is presented. "The Electric Motor in Saw Mill Work" is the title of bulletin No. 4470.

D & W Fuse Company, Providence, R. I.—Catalogue No. 12 of this company is a complete compendium of fuse material with all necessary information on cartridge fuses and safety devices for lighting, heating, power, railway, signal, telephone and telegraph circuits. It is a 99-page publication fully illustrated with engravings and complete with various tables.

Ball Engine Company, Erie, Pa.—A small pamphlet issued by this company calls attention to the fact that this is the twenty-fifth year of its existence and describes a number of the engines manufactured by it. One of these engines is a Corliss with patented valve motion with low clearances, by means of which economy is obtained and a high rotative speed is permitted.

Northern Pacific Railway.—"Eastward through the Storied Northwest" is published by the Northern Pacific Railway in response to the general and steadily increasing demand for a booklet giving accurate information about the Northern Pacific Railway, but is especially designed to meet the needs of persons traveling from the west to the east by that route. The publication is in its second edition.

Crescent Machine Company, 42 Main St., Leetonia, O.—The latest catalogue of this company presents a full list with an adequate description of its various wood-working machines. One of the types, a 32-inch band saw, has recently been redesigned and a number of new features added. The machine is made particularly for general planing mill use and the company states that it has proven satisfactory in general service.

Hayes Track Appliance Company, Geneva, N. Y.—This company manufactures lifting derails, a distinctive pattern of a device which is essential for the protection of the grade crossings of one railroad by another and as a safeguard in other instances. The company has recently made a number of improvements in the models of its device and an eight-page illustrated pamphlet tells what the improvements are and why they improve.

Sprague Electric Company, New York City, N. Y.—"The Electric Equipment of a Modern Hotel" is the title of an interesting illustrated bulletin issued by this company. The modern hotel referred to is the "Hotel Gotham" in New York and the equipment described includes that for electric light and power generation, the switch boards, electrical equipment for the laundry, for water service and for the vacuum cleaning system.

Hunkins-Willis Lime & Cement Company, St. Louis, Mo.—One of this company's products is the Hunkins roofing tile, a reinforced concrete tile 52 by 26 inches, which is said to be wind, weather and fireproof and not to be affected by gases, steam or fumes. This tile varies entirely in design from terra cotta clay, slate or other forms of roofing and may be laid directly on steel purlins without any woodwork in the roof construction.

D. F. Holman Railway Tracklayer Company, Railway Exchange, Chicago.—Modern engineering and railway construction demands the use of the tracklaying machine of which there are several successful designs. The machine manufactured by this company is illustrated in a sixteen page pamphlet which includes a list of contractors who have used the machine and a list of railroads on which the track-laying machine has been employed.

Ingersoll-Rand Company, 11 Broadway, New York.—Imperial type 10 air compressors are described in catalogue X36. This publication succeeds form R10A, which, although only recently published, has been exhausted, owing to the unexpected demand for information on this machine. The present catalogue gives a detailed description of the more important parts of the compressor and is illustrated by engravings from photographs and sectional drawings of the machine.

St. Louis Iron Mountain & Southern Railway Company, St. Louis, Mo.—On November 20 the Iron Mountain, Texas & Pacific, International & Great Northern and the National of Mexico inaugurated the south-bound service of the Mexico-St. Louis Special, leaving St. Louis, and on November 24 the north-bound service from Mexico City. The Iron Mountain System has issued a handsome folder presenting details of the schedule and interesting data about the country through which the trains pass.

Milliken Brothers (Inc.) New York.—This company is issuing a convenient handbook showing sections which its new steel mill at Milliken, S. I., is capable of rolling. The product of the plant at present consists of open-hearth I-beams, slabs, channels, angles, Z-bars, etc., and special attention is called to 24-inch channel sections, believed to be the largest channel now rolled. This section is intended specially for heavily-loaded columns and bridge chords where a large radius of gyration is essential to economy.

Carnegie Institute, Pittsburg, Pa.—This institution is to be dedicated in its new building on Thursday, April 11, and a pamphlet has been issued for distribution among the distinguished Europeans who have been invited to attend the ceremonies and for the information of the general public. Carnegie Institute was established some ten years ago by Andrew Carnegie originally as a library only, but on the night of the dedication of the building Mr. Carnegie announced his determination to establish in connection therewith a department of fine arts, a natural history museum and a school of music and presented $1,000,000 for developments. Authority was given for dismantling the library building and for the erection of a new structure to cost $6,000,000. The institute on its dedication will represent an expenditure and endowment for its various departments of $20,000,000.

RAILWAY REVIEW
DEC. 29. 06.

Texas Commission Reduces Sleeping Car Rates.

On Dec. 22, the Texas Railway Commission issued an order assuming jurisdiction over sleeping car charges, directing the railroads to reduce them 20 per cent, effective Feb. 1. It is generally understood that the railroads will not submit to the order unless a court of last resort rules that they must do so. As a result it is expected that injunction proceedings will follow and another hard-fought legal battle ensue. The Pullman Co. was completely ignored and the order is addressed to the railroads.

—The Toledo, Peoria & Western has ordered from the Pullman Co. 50 gondola cars of 80,000 lbs. capacity.

RAILWAY AGE
JAN 4 07

ALEXANDER JOHNSTON CASSETT.

A man of exceptional economic foresight, of superb daring, of unfaltering resolution in the execution of large plans, Mr. A. J. Cassatt was of statesman's stature and he rendered services to his country that will outrank those of most of his contemporaries. When Mr. Cassatt entered the railway service the railways of the country aggregated less than thirty thousand miles, and when he became a vice-president of the great company with which his entire railway life was spent the country had barely fifty thousand miles of line. When he died the mileage was nearly five times fifty thousand. In the physical and moral development of American railways from 1874, when he was elected third vice-president, to the end of 1906, his eighth year in the presidency, Mr. Cassatt had an important part. Even during the period of his nominal retirement, that preceded his return to the service as president, he exercised commanding influence as a director and also built a line which opened a new field of traffic development and blazed a route for progress along which others have followed so as to add tens of millions of dollars to the value of the agricultural lands made available for truck and market gardening.

Not forgetting the brilliant coup which saved the Philadelphia Wilmington & Baltimore to the Pennsylvania system, it is upon the results of his seven and one-half years as chief administrator of the greatest of the world's railways that Mr. Cassatt must ultimately be judged. He came to the presidency at a time when advancing prosperity had just about restored conditions similar to those which the United States had enjoyed prior to the last great panic, that of 1893. In the field of industry there were few who saw even faintly the promise of the business activity which has since taxed to the utmost the resources of the railways, and offered a golden harvest to those who were adequately prepared to perform the services which the country's prosperity has demanded with ever increasing intensity. Mr. Cassatt was of that few. With a foresight that was speedily justified by events he put his house in order and sought to eliminate every condition which might hinder a proper realization, by his company, of the legitimate results of what he saw ahead. It is yet too early to tell the complete story of the remarkable series of events, leading to the protection of railway earnings from rate-demoralization and the protection of the public from rebates and unjust but, theretofore, unpreventable discriminations, which Mr. Cassatt set in motion as one of the first acts after his accession. But it is not too much to say that at that time, as surely as Carnot "organized victory," Mr. Cassatt was then the organizer of prosperity, and not only of the prosperity of the Pennsylvania system but of the whole of America.

Concerning the physical development of the Pennsylvania to meet the needs of the present and in preparing for the demands incident to the normal growth of its tributary territory, Mr. Cassatt was equally prompt and farsighted. Those who would see the results will find them everywhere along the lines he administered and it is worth noting that plans of such unprecedented proportions that when first announced there was much skeptical shaking of heads are now generally accepted as wise and necessary. That in the meantime the capitalization of the system has been doubled has not prevented an increase in the earning power of each share. It is less important that there are now $400,000,000 of obligations where there was formerly a much smaller total than it is that the Pennsylvania is now well on the way toward complete preparation for the most exigent demands that the future can have in store. The vast and brilliantly conceived project of the New York terminal with its Hudson and East river tunnels is but an especially salient portion of the general scheme worked out by this great man. It will be a part, the most visable part probably, of the monument to his genius, but it will by no means measure the good that genius, well-used, has conferred upon the countrymen of him who possessed it.

RAILWAY AGE
JAN 4 1907

Pullman Company, Chicago, has been reported for some time by the daily press as about to begin the erection of new buildings at Pullman, Ill., for the construction of steel cars, but we are officially informed that although plans are now under consideration for extended shop facilities with a view to beginning the construction of steel cars for both passenger and freight service in the near future, nothing definite has yet been determined upon.

THE ATCHISON TOPEKA & SANTA FE PENSION SYSTEM.

On December 26, 1906, President E. P. Ripley announced to all employes the establishment by the directors of a pension system, saying: "It is with great satisfaction that I issue this day announcement concerning the pensions to be granted to loyal and worthy employes. I believe it to be more liberal in its terms than any pension system now in force and I sincerely hope that all will show appreciation of it by increased zeal and loyalty. Nearly every employe has it in his power to benefit the company by his work and influence, or to injure it by carelessness or indifference. The system about to be introduced will be carried out wholly at the expense of the company and it is only fair that those whose future is thus made safer should in return render the best service of which they are capable. I hope that it will some day be found possible to make the amount of pension larger. That will depend on the prosperity of the company, which every employe should strive to promote."

The pension plan adopted by the directors is stated as follows:

In order to enable the employes of the company, who have rendered long and efficient service, to retire when advanced age makes relief from work desirable, the following pension system shall be established on January 1, 1907, and shall continue in effect until the further order of the board.

Board of Pensions.

The pension system shall be managed, under the direction of the president, by a board, to be known as the "Board of Pensions," consisting of five officers or employes of the company, who shall be designated from time to time by the president, and shall act during his pleasure. A majority of the members of the board of pensions shall constitute a quorum for all purposes. The board shall elect a chairman from among its members and shall appoint a secretary, and it may adopt, subject to revision or veto by the board of directors or by the president, such rules as it may deem advisable.

To Whom Pensions May Be Paid.

The board of pensions may authorize the payment of a pension to any retired officer or employe who shall have been continuously in the service of the company during 15 years or more next preceding the date of his retirement and who at the time of his retirement shall have reached the age of 65 years, or who for any cause incident to his employment shall have become permanently incapacitated for the performance of the service in which he was engaged and who can not be transferred to other work which he is able to perform.

Employes of companies whose roads have been or hereafter shall be acquired by the Atchison Topeka & Santa Fe Railway Company by lease or purchase shall be deemed to have been in the service of the company from the date when they entered the service of the company of which the road shall have been acquired as aforesaid.

No person shall be paid a pension if during the 15 years next preceding his retirement he shall have been engaged in any business or employment other than the service of the company or the service of the company and of some other railroad company or companies.

No pension shall be allowed or paid to any officer or employe who shall make or enforce any claim against the company for damages by reason of any injury or accident occurring within three years prior to the date when such employe shall be retired or leave the service.

If any person after leaving the service shall be re-em-

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ployed, he shall be considered for the purpose of the pension system as a new employe. Any person whose name does not appear on the pay rolls for any two consecutive months shall be considered as having left the service, except that absence from the service pursuant to leave of absence duly granted or by reason of suspension or dismissal followed by reinstatement within one year shall not be considered a break in the continuity of service.

No person who hereafter shall be taken into the service at the age of 50 years or more shall be eligible to the payment of a pension.

The board of pensions may deny, revoke or withhold a pension allowance to any employe whenever the board shall deem such employe wholly undeserving on account of immorality or other misconduct; but no person shall be debarred from the receipt of a pension and no pension shall be revoked merely because the recipient shall have other means of support or because he shall engage in some other business, which is not prejudicial to the interests of the company or of some of its auxiliary companies.

Amount of Pensions.

The sums which the board of pensions may authorize to be paid monthly as pensions are limited as follows:

(a) For each year of service an allowance of 1¼ per cent of the first $50 of the highest average monthly pay of the officer or employe during any consecutive 10 years of service, and, in addition, ¾ of 1 per cent of any excess of such highest average monthly pay over $50; provided, however, that in no case shall the allowance made be less than $20 nor more than $75 per month.

(b) In exceptional cases of long and unbroken service with first-class record, the board of pensions may, with the approval of the president, increase by not exceeding 25 per cent the amount of any pension allowance hereinbefore authorized.

In case any officer or employe shall be in the service of the Atchison Topeka & Santa Fe Railway Company and also in the service of some other company, only the amount of monthly salary paid or contributed by the Atchison, Topeka & Santa Fe Railway Company shall be considered in fixing the amount of the monthly allowance to be paid or contributed by it.

Employes Who May Be Retired.

The board of pensions shall have the authority to retire:

(a) Any officer or employe who shall have attained the age of 65 years; and

(b) Any officer or employe who for any cause incident to his employment shall become permanently incapacitated for the performance of the service in which he was engaged and who cannot be transferred to other work which he is able to perform.

No Contractual Rights Conferred.

The establishment of this pension system is intended only to declare the present policy of the company and to give authority and instructions to the officers of the company to carry out this policy; and neither the establishment of this system nor the granting of a pension, nor any other action now or hereafter taken by the board of pensions or officers of the company shall be held or construed to create a contract or to give any officer, agent or employe of this company a right to be retained in its service or any right to any pension allowance, the company hereby expressly reserving the right at any time to discharge any officer, agent or employe and to terminate the pension system or any pension or pensions previously allowed, or to modify the pension system in any respect, either generally or in its application to any specific case.

The pension system will be put into effect January 1, 1907, by the board of pensions, consisting of J. W. Kendrick, G. T. Nicholson, W. B. Jansen, Robert Dunlap, and W. E. Bailey. The board at a later date will publish fuller information in regard to the actual operation of the system.

ALEXANDER J. CASSATT.

The late president of the Pennsylvania system and foremost figure among the originators and preservers of the "Pennsylvania standards," was possessed of exceptional ability in his power to conceive and execute broad and far-reaching policies. He had the early training, the thoroughness and the breadth of comprehension of the true engineer and was thus fitted to fill admirably the chief seat in the cabinet of engineers who direct the Pennsylvania. He readily accepted and easily carried great responsibility.

Alexander J. Cassatt was born on December 8, 1839, at Pittsburg, Pa., and had therefore just passed his sixty-seventh year when he died. His father, Robert S. Cassatt, was a man of affairs, having established the banking house of Lloyd, Cassatt & Co. in Philadelphia, which for many years he controlled. His name was also connected with industrial enterprises in western Pennsylvania.

After some schooling in the public schools at Pittsburg, A. J. Cassatt went to Europe with his father and his early education was there continued. He studied in France and then took a course in the university at Darmstadt. For his technical schooling he returned to the United States and took a full course in the Rennsselaer Polytechnic Institute at Troy, N. Y. From this institution he was graduated as a civil engineer in 1859 and soon thereafter engaged in railroad location work in Georgia, but gave up this work just prior to the outbreak of the Civil War.

Alexander J. Cassatt.

In April, 1861, he was made rodman on the Philadelphia division of the road of which he later became president. After a service of two years he became assistant engineer of construction of the Connecting Railway, built to link the Philadelphia & Trenton (a part of the United Railroads of New Jersey) to the Pennsylvania. The thoroughness of the young engineer's work attracted the special attention of Col. Thomas A. Scott, who afterwards became president of the company. It is related that when Colonel Scott was in Mr. Cassatt's office one day he asked for information about some detail of the bookkeeping department of the division. Instead of sending for the clerk in charge of this work Mr. Cassatt was able to explain immediately and accurately the point raised. Colonel Scott asked the young engineer how he knew that, and Mr. Cassatt replied, "I think it's a pretty good scheme to go through the books every few days so that if anything happens in the bookkeeping department I will not be left in the lurch."

This attention to every branch of his department led to Mr. Cassatt's rapid promotion. In 1864 when the Pennsylvania assumed control of the Philadelphia & Erie Railroad Mr. Cassatt was appointed resident engineer of that road, which was called the Middle division, and later he was placed in charge of the Warren & Franklin Railroad, which was built to serve the oil regions of the state of Pennsylvania.

In 1866, after five years' service in the civil engineering department of the road, Mr. Cassatt was given an opportunity to develop in another department of engineering. He was made superintendent of motive power and machinery of the Philadelphia & Erie, with headquarters at Williamsburg, Pa. In this position he served until November, 1867, when he was advanced to the position of superintendent of motive power and machinery of the Pennsylvania at Altoona, Pa. In the perspective this appears to have been a remarkable advance for a person without practical experience and seems to have been the result of Mr. Cassatt's unusual ability to apply himself to new problems and of his managerial instinct.

In this office he served for three years, at the end of which time the position of general superintendent of the Pennsylvania was left vacant by the resignation of Edward H. Williams. Mr. Cassatt was taken from the motive power department and placed in charge of operation as general superintendent on April 1, 1870. He acquitted himself so creditably that one year later, when the United Railroads of New Jersey became part of the Pennsylvania system, he was made general manager of the Pennsylvania Railroad lines east of Pittsburg and Erie.

Mr. Cassatt is credited with having been the means, while general manager of these lines, of securing the execution of one of the boldest financial deals in the company's history. As the story is told, Robert Garrett, then vice president of the Baltimore & Ohio, walked into the office of George B. Roberts, president of the Pennsylvania, and with marked satisfaction said: "Mr. Roberts, we have secured control of the Philadelphia Wilmington & Baltimore. We are not disposed, however, to disturb your relations with it." When the visitor had gone and Mr. Roberts' discomfiture had communicated itself to his staff, Mr. Cassatt declared that he knew where a controlling block of the stock could be secured at once. At a meeting of the directors that night a check was drawn for $14,949,052.20 to buy the road and this historic evidence of the rout of the Garrett forces now hangs in the office of the treasurer of the Pennsylvania Railroad.

Six months later, on July 1, 1874, Mr. Cassatt was elected third vice-president of the Pennsylvania and subsequently was made vice-president of the Northern Central, the Baltimore & Potomac and the West Jersey & Seashore roads.

As the responsible executive in charge of these various lines, he had the problem of welding them into a unified whole and of effecting the economies which would naturally suggest themselves to an officer of his administrative ability. This work included that of establishing new and better terminal facilities and of improving the equipment. Mr. Cassatt planned and built the floating equipment now maintained at Jersey City and Philadelphia.

OVER

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OVER

As third vice-president of the Pennsylvania Mr. Cassatt served from July, 1874, to June, 1880. In the latter year George B. Roberts was elected president and Mr. Cassatt was advanced to the first vice-presidency, in complete charge of not only the operating but also the traffic department. For two years, therefore, he was in practical executive control, except in the matters of finance and accounting. In 1882 he decided to relieve himself of responsibilities as an executive railroad official and retired to his farm, where he devoted himself to his private interests. Mr. Cassatt was very fond of horses and gave much attention to the breeding of prize hackneys; he was for years one of the principal exhibitors at the annual horse shows and was himself an expert whip.

A year after his retirement Mr. Cassatt became a director of the Pennsylvania, and in February, 1885, was made president of the New York Philadelphia & Norfolk, serving until June, 1889, but aside from these duties, which were not arduous, he devoted himself to his horses, his farm and his private enterprises as assiduously as if he had never contemplated a railroad career.

George B. Roberts served as president of the Pennsylvania from 1880 to 1897 and was succeeded upon his death by Frank Thomson, who served from February, 1897, to death in June, 1899. When Mr. Thomson died Mr. Cassatt, notwithstanding his 16 years of practical retirement, was asked to assume the presidency of the road. This offer he accepted and in the seven and one-half years, during which he was chief executive of that road, he accomplished the most important achievement of his career, although this work was not undertaken until he was nearly 60 years of age. It was he who conceived and executed the great coup of establishing a terminal for the Pennsylvania on Manhattan Island and of linking New York City with New Jersey by tunnels under the Hudson river and with Long Island by tunnels under the East river. Although Mr. Cassatt did not live to see the realization of this great project, he had the satisfaction of seeing the work advanced to a point where its completion was only a matter of time.

A contemporary calls attention to the openness of mind which was one of Mr. Cassatt's prominent characteristics, one instance of this being found in the fact "that he was among the first, if not the first, as he certainly was the most prominent and powerful of the railroad men who recognized at a very early point in the discussion of the matter that the functions of the federal government under the interstate commerce clause of the constitution would inevitably be widened and that the right as well as the expedient policy for the railroads would be to aid in their wise exercise rather than to oppose them." This openness of mind led him, during his career, to be one of the first railroad managers to take up the air brake, the block-signal system and other improvements. On the other hand, his persistence when he had made up his mind is illustrated in his fight with the Western Union Telegraph Company.

Mr. Cassatt had a large private fortune, lived exceedingly well, dressed in advance of the fashions and denied himself to reporters, although he was readily accessible to his neighbors at his Chesterbrook farm. As superintendent of roads in his county he built a system of highways that are declared to be unequaled in the United States. Mr. Cassatt was a stockholder in a score of companies, including the Union Switch & Signal Company, the United States Metallic Packing Company, the Pennsylvania Steel Company, the Cambria Steel Company, and other companies closely associated with the railroad business.

President James McCrea.

The election of James McCrea as president of the Pennsylvania Railroad Company seems to be a logical sequence of the policy under which the administration of this great company has been conducted from the first. Evidently the selection was made because of a combination of attainments in the candidate and not in pursuance of civil service rules for promotion. The Pennsylvania Railroad has five vice-presidents, any one of whom doubtless is capable of administering the affairs of the company with success. The president-elect was not an officer of the parent company, although he was executive head of the western lines of the system; but his railway experience, extending over more than 40 years of continuous service, has covered the entire range of constructive, operative and executive work, and common consent on the part of directors and officers of the Pennsylvania seems to have marked Mr. McCrea as the logical successor of Cassatt, Frank Thomson, Roberts, Scott and Edgar Thompson in the presidential chair. Mr. McCrea has passed his 58th year, having been born in Philadelphia on May 1, 1848. After obtaining the foundations of education and the habit of study in a private school and in the Pennsylvania Polytechnic College, he commenced railway work at the age of 17 as a rodman.

The record of the steps in his career of continuous service is as follows: 1865, rodman and assistant engineer, Connellsville & Southern Pennsylvania; 1868, assistant engineer of construction, Allegheny Valley; 1871, principal assistant engineer, construction department, Pennsylvania Railroad; 1874, assistant engineer maintenance of way, Philadelphia division; 1875, superintendent middle division; 1878, superintendent New York division; 1882, manager Pittsburg Cincinnati & St. Louis and Chicago St. Louis & Pittsburg railways; 1885, general manager Pennsylvania Lines West of Pittsburg; 1887, fourth vice-president and general manager; 1890, second vice-president; 1891 to date, first vice-president Pennsylvania Lines West of Pittsburg, also president Cincinnati & Muskingum Valley Railroad; Terre Haute & Indianapolis Railroad and its successor, the Vandalia Railroad; Grand Rapids & Indiana and Cleveland Akron & Columbus railways. With the foundation of long practice in the profession of civil engineering, to which the traditions of the Pennsylvania Railroad attach great importance, Mr. McCrea also has had extended experience in operating work as division superintendent and general manager, and for some years has had to take the more comprehensive outlook of the executive at the head of financial, legal and operative affairs. Of powerful frame and untiring physique, Mr. McCrea is an embodiment of forcefulness and determination qualified by judicial action and a spirit of exact justice tempered by mercy. He impresses those who meet him as a fair, as well as a strong, man, who will handle the vast powers now committed to him with full appreciation of his obligations to the public, as well as to the owners and employes of the road, and in short is fully capable of wearing the mantle of his distinguished predecessors. That the general policy under which the Pennsylvania has been developed and also that the daring and far-seeing plans of the Cassatt administration for the enlargement of the Pennsylvania's facilities in New York and all along the lines will be carried out under President McCrea was to be expected and is already announced.

RAILWAY AGE. JAN 11. 07

Missouri.—A bill has been introduced in the house to amend the law passed by the last legislature to regulate demurrage and storage charges and to prevent delays in furnishing cars and in transportation. The amendment proposes to exempt carriers from liability on account of failure to furnish or move cars when prevented by storms, disturbances or other causes over which the carrier has no control. Under the present law the shipper may not only claim a demurrage of $1.00 per car per day, but may also sue the road for loss or damage resulting from failure to furnish or move cars promptly.—Senator Grimes introduced a bill providing for a reduction of passenger rates on the railroads of the state to two cents per mile.—A bill by Senator Avery proposes to reduce the rates on sleeping cars to $1.50 for lower berths and $1.00 for upper berths.—A bill introduced by Senator Bradley classifies the railroads into three classes, A and B to be limited to two cents per mile for passenger transportation and class C roads to three cents per mile.—A bill by Senator Bradley prohibits free passes of any kind in Missouri.—An antitrust measure introduced in the house by Representative Griffiths provides for fine and imprisonment of offices of a corporation discriminating in the prices of manufactured goods between one part of the state and another. A bill by Representative Speers would punish anyone who gives or receives and uses a railway pass except employes and beneficiaries of philanthropic institutions.

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RAILWAY AGE

JAN. 11. 07

Mr. James McCrea, who was recently elected president of the Pennsylvania Railroad, succeeding the late A. J. Cassatt, has been chosen president of the Pennsylvania Company, the Pittsburg Cincinnati Chicago & St. Louis, the Northern Central, the Philadelphia Baltimore & Washington and the West Jersey & Sea Shore also. Mr. Joseph Wood, second vice-president in charge of traffic of the Pennsylvania Lines West, has been chosen first vice-president to succeed Mr. McCrea. Mr. J. J. Turner, third vice-president in charge of transportation and real estate departments, has been made second vice-president, with the same duties as heretofore. Mr. Edward B. Taylor, fourth vice-president in charge of the treasury and accounting departments, has been elected third vice-president, with the same duties as heretofore. Mr. D. T. McCabe, freight traffic manager, has been made fourth vice-president in charge of traffic. Mr. William Hodgdon, heretofore general freight agent of the Vandalia, has been appointed to succeed Mr. McCabe as freight traffic manager of the Pennsylvania Lines West. Headquarters, Pittsburg, Pa.

RAILWAY REVIEW JAN 12 07.

Electric Sleeping Car Service.

The Illinois Traction System has made arrangements to commence an interurban sleeping car service between Decatur and Springfield, Ill., and St. Louis. Two parlor sleeping cars have been purchased which for the present will be used for the purpose. It is not the intention to run these cars at a high rate of speed, but at such a rate as to carry the passengers comfortably into the terminal and afford a good night's rest. The fare for the trip has not yet been finally determined, but it is expected to be one dollar for the berth in addition to the regular fare which is two cents per mile. The cars are 56 ft. long and weigh about 45 tons. They are equipped with four 150 h. p. motors each. They have sleeping compartments for 20 passengers and have all the convenience and elegance of finish of the latest Pullman cars.

RAILWAY AGE. JAN. 18. 1907

Erie was reported in The Railway Age for January 11 as being in the market for 60 suburban coaches. This order has been placed with the Pullman Company.

Chicago & Northwestern has placed an order for 25 coaches with the Pullman Company.

Boston & Maine has ordered one passenger and baggage car from the Pullman Company.

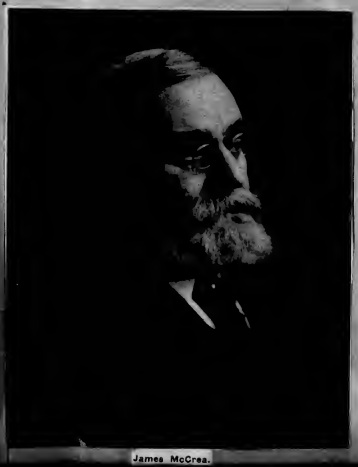
JAN. 25. 07

Minnesota.—Bill introduced: Giving the railroad commisison authority to compel the installation of safety devices, including interlocking apparatus, a block signal system, or any other device that may promote public safety.—A reciprocal demurrage bill is under discussion.—A tax of one per cent upon the properties of sleeping car companies is proposed by bills in the house and senate.—A bill in the house proposes a gross earnings tax of 4 per cent upon private freight lines operating in the state.

RAILWAY REVIEW JAN. 26. 07

A part of the Wilmington, Del., plant of the Pullman Company has been damaged by fire to the extent of about $100,000. Included in the loss are 14 Pullman cars which had been repaired and were ready to leave the shop.

—The Pullman Company has declared a quarterly dividend of two dollars per share from net earnings, payable February 15, to stockholders of record at close of business January 31.



James McCrea.

THE EIGHTH PRESIDENT OF THE PENNSYLVANIA.

On January 2 James McCrea was elected president of the Pennsylvania Railroad Company to succeed Alexander J. Cassatt, who died on December 28, 1906. Since its organization in 1847, the Pennsylvania Railroad Company has had eight presidents, whose names and length of service are as follows:

1. Samuel V. Merrick, 1847-49, 2 years.
2. William C. Patterson, 1849-1852, 2½ years.
3. J. Edgar Thomson, 1852-1874, 22¾ years.
4. Thomas A. Scott, 1874-1880, 6 years.
5. George B. Roberts, 1880-1897, 16½ years.
6. Frank Thomson, 1897-1899, 2½ years.
7. Alexander J. Cassatt, 1899-1906, 6½ years.
8. James McCrea, from January 2, 1907.

The administration of the two first presidents, aggregating 4½ years, covered the period of construction, and the work of the executives was chiefly of a financial nature; in fact they were not versed in railway operation or management. The first president of the Pennsylvania railroad who was fitted by education and ability to be the actual executive dominating all departments, construction and operation, as well as finance, was J. Edgar Thomson, who for more than 20 years shaped the policy of the growing company, and whose name still stands among those of the greatest masters of railway management. Mr. Thomson and all his illustrious successors died in the presidency, with the single exception of Mr. Scott, who was forced by ill health to resign and died a few months later from the effects of his arduous services. There has never been an interregnum of more than a few days in the presidency of the Pennsylvania Railroad Company; the natural successor to the chair has always been at hand in the official ranks of the company, and there has been neither delay nor dispute in filling the vacancy. The self-contained methods of this company and the continuity of official service therein have constituted one of the secrets of its success.

Mr. McCrea, immediately on his election by the directors, took his seat at the head of the company and plunged into work with his accustomed forcefulness, giving out this declaration:

"The policy of the Pennsylvania Railroad does not depend upon any one man. It continues unchanged from year to year. It will be my purpose to promote as best I can the same progressive development which was conducted so ably under President Cassatt and the presidents who preceded him."

The new president's personality is thus outlined in one of the Philadelphia papers:

"Six feet two, straight as a block-signal post, carrying his 200 and more pounds easily and gracefully as an athlete, he looks the part of a commander, first of all. In the matter of years, he is 58. But there's nothing old-mannish about him at all. The gray in his square-trimmed, bushy beard (that beard fairly bristles, his friends say, when he's particularly determined or enthusiastic) and in his still plentiful head of hair scarcely predominates over the original chestnut. And his steel eyes which peer out from behind gold-rimmed nosegiasses are as bright and steady and unwinking as a couple of tower-lamps on a clear night. He's a man at the full height of his physical powers—a railroad man all the way up and down. He is friendly, easily approachable, strong-gripping when he greets a friend and most democratic with his associates and with all railroad men. He will always listen to a man, especially a railroader, and he is always willing to see the other man's point of view, and to learn something from him, if he can."

In addition to his extended experience as an engineer and an operative executive, Mr. McCrea has for some years had large part in the financial affairs of the Pennsylvania Company and is credited with having financed the great loans which that company placed for the Pennsylvania Railroad Company. Having for several years had his headquarters at Pittsburg as the immediate executive of the Lines West, Mr. McCrea now has returned to Philadelphia, as head of the entire Pennsylvania System.

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7. Alexander J. Cassatt, 1899-1906, 6¼ years.
8. James McCrea, from January 2, 1907.

The administration of the two first presidents, aggregating 4½ years, covered the period of construction, and the work of the executives was chiefly of a financial nature; in fact they were not versed in railway operation or management. The first president of the Pennsylvania railroad who was fitted by education and ability to be the actual executive dominating all departments, construction and operation, as well as finance, was J. Edgar Thomson, who for more than 20 years shaped the policy of the growing company, and whose name still stands among those of the greatest masters of railway management. Mr. Thomson and all his illustrious successors died in the presidency, with the single exception of Mr. Scott, who was forced by ill health to resign and died a few months later from the effects of his arduous services. There has never been an interregnum of more than a few days in the presidency of the Pennsylvania Railroad Company; the natural successor to the chair has always been at hand in the official ranks of the company, and there has been neither delay nor dispute in filling the vacancy. The self-contained methods of this company and the continuity of official service therein have constituted one of the secrets of its success.

Mr. McCrea, immediately on his election by the directors, took his seat at the head of the company and plunged into work with his accustomed forcefulness, giving out this declaration:

"The policy of the Pennsylvania Railroad does not depend upon any one man. It continues unchanged from year to year. It will be my purpose to promote as best I can the same progressive development which was conducted so ably under President Cassatt and the presidents who preceded him."

The new president's personality is thus outlined in one of the Philadelphia papers:

"Six feet two, straight as a block-signal post, carrying his 200 and more pounds easily and gracefully as an athlete, he looks the part of a commander, first of all. In the matter of years, he is 58. But there's nothing old-mannish about him at all. The gray in his square-trimmed, bushy beard (that beard fairly bristles, his friends say, when he's particularly determined or enthusiastic) and in his still plentiful head of hair scarcely predominates over the original chestnut. And his steel eyes which peer out from behind gold-rimmed nosegiasses are as bright and steady and unwinking as a couple of tower-lamps on a clear night. He's a man at the full height of his physical powers—a railroad man all the way up and down. He is friendly, easily approachable, strong-gripping when he greets a friend and most democratic with his associates and with all railroad men. He will always listen to a man, especially a railroader, and he is always willing to see the other man's point of view, and to learn something from him, if he can."

In addition to his extended experience as an engineer and an operative executive,

Mr. McCrea has for some years had large part in the financial affairs of the Pennsylvania Company and is credited with having financed the great loans which that company placed for the Pennsylvania Railroad Company. Having for several years had his headquarters at Pittsburg as the immediate executive of the Lines West, Mr. McCrea now has returned to Philadelphia, as head of the entire Pennsylvania System.

RAILWAY AGE

February 1, 1907.

Halts Pullman Rate Cut.—Judge Edgar R. Meek of the United States circuit court at Dallas on January 25 granted to the Pullman Company a temporary injunction restraining the railroad commission of Texas from enforcing its order reducing the rates on Pullman cars in that state.

RAILROAD GAZETTE. FEB. 1. 07

The German Dining Car Company at the end of its fiscal year, Sept. 30 last, had 56 dining cars and contracts with railroads for running such cars on 60 trains. It paid for the privilege of attaching its cars to trains an amount equal to 7¼ per cent. on its capital. Its net earnings were at the rate of $2,632 per car, which is three times as much as the dividend of 10 per cent. paid on its capital of $476,000. The capital indicates that its cars have cost less than $8,500 each.

The Texas Railroad Commission has ordered a 20 per cent. reduction of Pullman fares within the state, effective February 1.

RAILWAY REVIEW FEB 2. 07

Pullman Milk Cases.

The grand jury of Allegheny county (Pa.) has returned six true bills against the Pullman Palace Car Co., alleging the sale of impure milk and cream to its patrons.

RAILWAY AGE. FEB. 8. 07

Texas Railroad Commission Asks More Power.—The Pullman Company having questioned the authority of the Texas railroad commission to regulate its charges, the commission has caused a bill to be introduced in both houses of the legislature declaring the sleeping car companies to be common carriers, requiring them to keep general offices in the state of Texas, subjecting their books to inspection by the commission and empowering the commission to regulate their rates. The bill provides that failure to comply with these requirements shall subject sleeping car companies to a fine of from $100 to $500 and a forfeiture of the privilege of doing business in the state.

RAILWAY. REVIEW FEB 9. 07

Pullman Legislation in Pennsylvania.

The committee on corporations of the Pennsylvania legislature has reported favorably a bill establishing a rate of one-half cent a mile for a double lower berth on sleeping cars, with an optional minimum rate for the occupant of $1.25; three-eighths of a cent a mile with an optional minimum rate of 85 cents for an upper berth, and one-third of a cent a mile for chair seats.

FEB. 16. 07

—The Pullman Company, Chicago, has engaged C. Frank Jobson, architect, of Chicago, in preparing plans for a large plant for the manufacture of steel passenger coaches to be built at the Pullman works. The plant will comprise a dozen buildings, of brick, steel and concrete. The estimated cost is $5,000,000.

RAILROAD GAZETTE. FEB 22. 07

Sleeping Cars on Illinois Traction Lines.

The Holland sleeping car for electric railroads was described in this paper at the time that the first two cars were being built (*Railroad Gazette*, Aug. 14, 1903), and the statement was made that they would be operated over certain of the traction lines between Indianapolis and Ohio points. They were in this service for a time, but later were withdrawn, and last fall the two cars, with all the Holland Sleeping Car Co.'s patent rights for America, were acquired by the Walter A. Zelnicker Supply Company, St. Louis, Mo. The two sleeping cars were later sold to the Illinois Traction System, and were taken into their shops at Bloomington for a complete overhauling and refitting. They were placed in service on the first of this month between Bloomington and St. Louis, via Decatur and Springfield. In exterior appearance they are like the usual large interurban electric car. The interior, however, is novel, as appears from the views shown herewith.

Interior of Holland Car for Day Travel.

21

To give again, briefly, the scheme on which this car is designed: In the day time it is used as a parlor car. The chairs are spaced alternately 3 ft. 6½ in. and 3 ft. 3½ in., the narrow

Section Made Up with Front Partition Removed.

spacing being between the chairs turned back to back when the berths are made up. To make up the berths the inner arm of each chair is dropped down to a horizontal position to fill the space between chair and car side, and the seat cushions are pulled forward, resting on supporting rods fitting in sockets in the front panel of the chair. The outside chair arms are removed completely, being used to fill the remaining space between chairs and wall, the backs are pulled down, and the head rolls dropped forward to provide pockets for clothes. The upper berth mechanism is quite similar to the Pullman arrangement, and bedding, etc., is carried in the pocket under the roof. Compartments under the chairs hold the pillows, and the blankets and linen are kept in closets at the end of the car. The completion or screening off of the compartment is accomplished by means of flexible wooden screens, made on the principle of a roll-top desk, which disappear beneath the floor in the day time. They slide in removable posts which fit in sockets in the floor and are supported at the top by the special ornamental open grille extending down from the roof of the car. A berth is large enough for a single person only, is extra long—6 ft. 8 in.—and the compartment is large enough to provide a space between berth and front screens approximately 14 in. wide, for

Interior of Car with Part of Berth Made Up.

dressing and undressing. Other facilities provided are quite as complete as in a standard Pullman.

The cars are 57 ft. long over all and weigh 50 tons. They are equipped with 150 h.p. of motors. The service competes with the Chicago & Alton and the results will be watched with interest.

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RAILWAY REVIEW
FEB 23-07

Steel Sleeping Car.

The Pullman Co. has placed on exhibition the all-steel sleeping car which it has been developing during the past couple of years. The new car is all steel except the upholstery. All decorations that formerly ornamented ceilings, panels between windows and berths are steel. The floor is concrete laid on steel girders. The car is as nearly wreck and fire proof as it is possible to make such a structure.

—The St. Louis & San Francisco has ordered from the Pullman Co., 40 coaches, 25 baggage cars, 6 baggage and mail cars and 15 chair cars.

RAILROAD GAZETTE
MAR 1. 1907

The Metropolitan West Side Elevated, Chicago, has ordered 20 motor cars from the Pullman Company.

RAILWAY REVIEW MAR 2 07

—The Missouri & North Arkansas has given to the Pullman Company orders for 4 coaches, 1 combination express and mail car and 1 baggage car, all to be 60 ft. long and 9 ft. 8 in. wide over sills.

RIALROAD GAZETTE
MAR 15.07

W. A. Hughes, Purchasing Agent of the Pullman Company, died at his home in Chicago on March 8th.

MAR 22.07

The Intercolonial is figuring on ordering one passenger coach from the Pullman Co.

The Norfolk & Western has ordered 243 40-ton flat cars from its Roanoke, Va., shops.

The O. F. Jordan Co. has ordered five flat cars from the Hicks Locomotive & Car Works.

The New York Central & Hudson River has ordered 35 passenger coaches from the Pullman Co.

RAILWAY REVIEW
MAR. 23.07.

The Pennsylvania system is sending over its system for purposes of general inspection, the new all-steel sleeping car recently developed by the Pullman Co. to be in line with other passenger car progress. It will later be placed on exhibit at the Jamestown Exposition.

RAILWAY AGE
MAY 31.07

Indiana has granted to the founders of the manufacturing town of Gary what Illinois has forcibly taken from the makers of the like town of Pullman—the right to own and administer the public utilities. The tract of 1,700 acres of sand dunes upon which the United States Steel Corporation proposes to build a plant that alone will support a population of 50,000 people when the works begin operation in May, 1908, is already known legally as the village of Gary. To the village government the corporation which is to bring into being the new center of population and industry made petition for franchises under which it might supply such necessities of urban life as gas, electric light, water and street car service. Municipal ownership advocates and newspapers across the Illinois line volunteered advice and warning as to the perils of corporation ownership, but the three trustees constituting the Gary government, receiving no competing bids and having no visions of immediate municipal ownership, granted the desired franchises, without either demanding a bonus or offering a subsidy. Within five years, it is predicted, Gary will be a city of 200,000 people, the second in Indiana, with a vast steel plant costing some $60,000,000—comprising rolling mills, rail mills, 16 blast furnaces, 84 open-hearth furnaces—putting out a greater product than any other steel mill in the world, around which will have sprung up other great industries. All this industrial wealth with its taxable possibilities was offered to Chicago and Illinois, but was repelled by municipal and state requirements which were not imposed across the state line.

The Pullman Company has filed a protest with the secretary of state of Arkansas because, while only $287,753 of its capital is in that state, it is assessed on $412,000.

RAILROAD GAZETTE
MAR 29. 07.

Grover Cleveland on Attacks Against the Railroads.

The following is from an interview with ex-President Grover Cleveland published in the *New York Times* of March 24th:

There is much of the nature of delirium in the popular outcry against railroad corporations, for instance. We shall all be ashamed of it by and by. I dare say I have some reason to know of the real iniquities of corporations, and I do know them, but there is much that is not only groundless, but wrong, in the offhand attacks made on the railroads by thoughtless people on all sides. What is well founded in them will be cured, but the craze of denunciation will soon pass. We shall reflect that railroads are vitally related to our prosperity, and that to attack them needlessly is to attack ourselves. It is not the stock of soulless millionaires, but the property of citizens, of widows and orphans, whose savings are invested in railroads, that is being damaged. We shall recall what railroads have been and are still to be in the development of our country, and this craze will pass.

Of course there must be some form of governmental supervision, but it should be planned in a quiet hour, not in one of angry excitement.

Popular emotions follow peculiar laws. The psychology of a craze is most interesting. The temptation is well-nigh irresistible to do what we observe our neighbors do. If they begin to throw stones, we hunt for missiles ourselves. The railroads have had a hard time lately. Every man's hand is against them. Wherever a railroad head is to be seen it is safe and amusing to hit it; its owner has no friends. There are some pretty big difficulties before railroad managers just now. Before long we shall have a crop to move, under perplexities greater than those of last year. And the increasing production of the country will increasingly emharrass the railroads. But I have faith to believe that whenever a thing must be done Yankee wit and pluck will find a way to do it—especially if there is any profit in it.

Only we should help and not hinder. I have observed those passionate outbursts during a life of threescore years and ten. I trust I have a fitting appreciation of the justice which lies beneath the present popular clamor against corporations, and especially railroad corporations, but I believe that as a frenzy it will pass, and that the people will demand of the party to which they give their suffrages the enunciation of a principle rather than the denunciation of a condition.

Doubtless the questions which the press keeps so persistently before the public attention and in which there is indeed keen public interest are urgent and important. They must be met and solved. They will be solved by common sense and justice. I am no friend of corporations. I am afraid I should wipe out the possibility of the existence of the evil ones, but I see in the question as to whether railroad fares should be 3 cents or 2 cents a mile no great principle.

The Wisconsin senate has advanced the Nye bill providing that upper berths in sleeping cars must stay up unless taken, for benefit of lower herth occupants. It is said that this insures the hill's passage.

JUNE 7.06

The Tonopah & Goldfield, as reported in the *Railroad Gazette* of April 12, has ordered six cabooses of 30,000 lbs. capacity from the Pullman Company for June delivery. These cabooses will measure 18 ft. 4 in. long, 9 ft. wide and 6 ft. 3 in. high, inside measurements. The special equipment includes:

Axles	Pullman
Brake-beams	Pullman
Brake-shoes	Christie
Couplers	Climax
Door fastenings	Yale
Springs	Pittsburg Spring & Manufacturing Co.
Wheels	Griffin

The Chicago, Burlington & Quincy has ordered 2,000 40-ft. wooden box cars of 80,000 lbs. capacity from the Pullman Co.

The Arms Palace Car Company, Chicago, as reported in the *Railroad Gazette* of May 17, has ordered ten express horse cars from the Pullman Company.

RAILWAY AGE JUNE 7.07

The Chicago Burlington & Quincy has placed an order with the Pullman Company for 2,000 all-wood box cars of 80,000 pounds capacity, for October, 1907, delivery. These will have a length inside of 40 feet, will be 8 feet wide and 8 feet 6 inches high, inside measurement. The special equipment will be company's standard.

RAILWAY AGE MAY 31.07

Sierre Madre Land & Lumber Company has placed an order with the Pullman Company for 150 all-wood box cars of 60,000 pounds capacity, as reported in The Railway Age of April 19. The specifications call for the following details:

Length, inside	36 ft.
Over sills	36 ft. 11¼ in.
Height, inside	8 ft.
Width, inside	8 ft. 6 in.
Over sills	9 ft. ¾ in.

Special Equipment.

Axles	Pullman
Bolsters	Commonwealth
Brakebeams	Am. Steel Fdries.
Brakeshoes	Christy
Brakes	Westinghouse
Couplers	Tower
Door fastenings	Security
Dust guards	Positive
Journal boxes	Franklin
Roofs	Chicago-Cleveland
Trucks	Arch bar
Draft rigging	Transon cast steel
Paint	Princess metallic

RAILROAD GAZETTE
MAY 31. 07

The Southern Pacific has ordered three observation cars from the Pullman Company.

RAILWAY AGE APRIL 12 07

Minnesota.—The senate has passed the bill to provide that sleeping car companies shall pay a tax of 4 per cent on their gross earnings, these to include receipts from intrastate business and a proportion of the interstate earnings based on the proportion of the mileage in the state to the total mileage over which the business is carried on.—A resolution has been introduced in the house to instruct the state railroad commission to investigate the rates charged by the Duluth Missabe & Northern and the Duluth & Iron Range to ascertain what their earnings and operating expenses are and to order that their rates shall be so reduced as to allow them a "reasonable, fair and just income on the amount of money that they have invested, and no more." The resolutions allege that the railways in question charge excessive rates for the transportation of iron ore, and thereby earn two or three times as much per mile as other railways operating within the state.—The 2-cent fare bill has been signed by Governor Johnson and will go into effect on May 1.—A bill has been introduced in the senate to make the commodity rates fixed in the schedule of the state railroad commission, which is now the subject of litigation in both the state and federal courts, the maximum legal rates and to make it a felony for any railway to charge higher rates. The object of this proposed legislation is stated to be to force the railways to fight the proposed reductions in the state courts with a possible appeal to the supreme court of the United States instead of contesting them in the United States circuit court, which has already issued an injunction restraining the commission from putting the proposed rates into effect.

Intercolonial has placed an order with Rhodes, Curry & Co. for 100 box cars of 60,000 pounds capacity, 70 dump cars of 30,000 pounds capacity, 130 hopper cars of 30,000 pounds capacity and 5 refrigerator cars of 60,000 pounds capacity; also with the Pullman Company for 1 dining car and 1 sleeping car.

Boston & Albany, as reported in The Railway Age of April 5, has placed an order with the Pullman Company for 10 vestibule passenger coaches and with the Allston (Mass.) shops of the company for 2 mail storage cars.

RAILROAD GAZETTE APRIL 12 07

State Reductions of Passenger Fares.

The law limiting passenger fares to 2 cents a mile, which was recently passed by the Legislature of Pennsylvania, was signed by the Governor on April 5. It goes into effect on September 30, and the penalty for violation is $1,000. The Legislature is likely to pass a bill exempting roads less than 40 or 50 miles long. President McCrea, of the Pennsylvania, wrote a letter to the Governor complaining of the injustice of the bill. This letter has been made public, but seems to have had no effect with the Governor. A passenger fare bill has been passed by the upper house of the Michigan Legislature. The limit is 2 cents on all roads in the lower peninsula earning over $1,200 a mile, net. On the upper peninsula 4-cent rates are reduced to 3 cents. The 2-cent rate in Indiana goes into effect on a date to be fixed by the Governor; it was expected that the Governor's proclamation would be issued this week. The railroads of Mississippi, with the exception of the Louisville & Nashville, which works only 74 miles in that State, have decided to comply with the order of the State Railroad Commission to sell 2,000-mile books at 2 cents a mile. A 2-cent fare law has been passed by both houses of the Minnesota Legislature. The lower house of the Pennsylvania Legislature has passed a bill permitting interurban railroads to carry freight and limiting the prices for berths in sleeping cars. For lower berths the limit is one-half cent a mile, for upper berths three-eighths cent, and seats in parlor cars, one-third cent.

A passenger desiring recently to secure a berth in a sleeping car from Chicago to Philadelphia over the Pennsylvania lines on presentation of two mileage tickets, one for the lines west of Pittsburg and one for the lines east, was refused, the railroad holding that, as the mileage tickets are issued solely for local use in carefully designated territories, it would be an illegal discrimination to consent to the use of such reduced rate tickets for a through journey over a line where the reduced rate had not been posted according to law. Therefore, the combination cannot be honored, either in checking baggage or in the sale of through sleeping car tickets.

The Sierra Madre Land & Lumber Co., New York City, has ordered 150 box cars from the Pullman Company.

The National Tube Co., Pittsburg, Pa., it is reported, has ordered six steel flat cars from the Youngstown Car Manufacturing Co.

The Tonopah & Goldfield has ordered six cabooses from the Pullman Company, and is reported to be in the market for 150 box cars.

RAILROAD GAZETTE
APRIL 12. 07

Decision by Judge Speer on the Federal Employers' Liability Act.

The constitutionality of the law passed by Congress last June, enlarging the liability of common carriers for damages in case of injury to employees—which has been decided by two United States Judges in one way and by two others in another way, and which is soon to come before the Supreme Court of the United States—is the subject of a somewhat exhaustive decision by Judge Emory Speer, of the United States Circuit Court for the Southern district of Georgia, which has just been published. This case is that of Snead against the Central of Georgia, which is a suit for damages for the death of a bridgeman who was knocked off the bridge to the ground below by the negligence of other employees. Judge Speer holds the law constitutional. The Judge says that he is aware that nothing short of a decision by the Supreme Court will be generally satisfactory, but he did not feel at liberty to evade the responsibility of making his own determination. Even if he were in doubt as to the constitutionality of the law he would uphold it, for "it is a part of that splendid practical philosophy of government which is intended for the betterment of mankind." The syllabus of the decision says:

The final and common arbiter of all constitutional questions is the supreme judicial authority of the courts of the United States. There is a settled presumption in favor of the validity of every legislative act. Every reasonable judicial doubt must be resolved in favor of the law. The courts will decide that Congress has transcended its powers only when that is so plain that they cannot avoid the duty. Employees of corporations engaged therein are instrumentalities of commerce. Restrictive or benevolent regulation of those employees is within the power of Congress, which may be exercised to its utmost extent, and acknowledges no limitations other than those prescribed in the Constitution. Congress alone by legislation may occupy the whole field of interstate commerce. The words "to regulate" import the right and power to *enact laws*, and not merely to make rules and regulations. When a corporation engages in interstate or foreign commerce the men who control it, and the corps of its employees, become subject to all those legitimate means which Congress may select for its regulation. The reasons now alleged for the rule denying to an employee the right to recover for injuries sustained by the negligence of a fellow-servant, in view of modern conditions, are archaic. The purpose of Congress being legitimate, and expressly relating to employees engaged in interstate or foreign commerce, it is immaterial to the validity of the act that somewhere in its operation it may have a casual or contingent effect upon the domain of state legislation. The Government of the United States, within the scope of its powers, operates upon every foot of territory in its jurisdiction. It legislates for the whole nation, and is not embarrassed by state lines. Here, however, no right proper to the state, or any of its instrumentalities of government, is drawn in question. * * *

The main arguments of the defendant were that the act is not a regulation of commerce within the meaning of the commerce clause of the Constitution; that said act, if it be a regulation of commerce, is not limited to commerce with foreign nations, or among the several states or with the Indian tribes, but extends as well to intrastate commerce; that interstate and intrastate employees are so commingled by this act that it is impossible to make it apply only to interstate employees, unless the court reads into the act something which Congress has not put there, and this the court may not do; that it is a violation of the fifth amendment to the Constitution, which provides that "no person shall be deprived of life, liberty or property, without due process of law."

On the claim that a man engaged in interstate traffic may also handle traffic which is intrastate, and that this should vitiate the legislation of Congress, Judge Speer says that by parity of reasoning this would annul the federal laws which regulate interior waterway nevigation, and would abolish the Interstate Commerce Commission. Were the argument sound, "the shipment of a crate of pigs from Macon to Griswoldville would annul the power of Congress to control the shipment by the same train of a thousand bales of cotton bound from Macon to Liverpool." In the trade mark cases, and others relied on by the defendant, the laws in question contained no reference to interstate or foreign commerce, while the law now in question is clearly declared to be a regulation of interstate commerce.

RAILWAY AGE
APRIL 19. 07.

THE FIRST STEEL PULLMAN SLEEPING CAR.

The steel sleeping car which the Pullman Company recently completed has attracted unusual attention from railroad officers not only because the car is constructed entirely of metal, but on account of the decorative features which have all the beauty of graceful outline and pleasing color treatment which are characteristic of recent Pullman cars

The First Steel Sleeping Car—Interior View of the Main Body of the Car.

built of wood. This is true not only of the interior finish but of the exterior, where the simple straight line scheme is carried out in such pleasing proportions, especially in the window treatment, that the steel car may well serve as a model for wooden cars in this respect. The car has already been on private exhibition at the Broad street station of the Pennsylvania in Philadelphia and at the Grand Union station of the New York Central in New York City. It is named "Jamestown," as it is intended to be placed on exhibition at the Jamestown exposition during the summer.

In the construction of the car it was the intention of the builders to make it fireproof by the entire exclusion of wood, and the framing throughout is of steel and the finish is steel, aluminum or brass. The underframe is made up of two 15-inch I-beam center sills with ½-inch cover plate on top only, and these beams are continuous through to the end sills. The center sills are trussed with 1⅞-inch rods upset for 2⅜-inch turnbuckles. For the side construction is a ¼-inch plate about 30 inches deep, which forms the side sheeting of the car below the windows. This plate is stiffened at the lower edge with a 6 by 6 by ½ inch angle, which is continuous between end sills. The upper member of this girder is a 3-inch steel bar outside and the side posts are offset around it. All the rivets in this side sheeting are countersunk and the whole surface is smoothly finished. The body bolster is double and made of a steel casting integral with the end sill and platform beam, draft sills, center plate and side bearings. This large casting combines within itself practically all of the end of the underframe. It was furnished by the Commonwealth Steel Company. There are four cast-steel cross bearers spaced equally between the body bolsters, and each is cast in one piece, extending between the side sills. Extending between the cross bearers there are floor beams, which are made of 4-inch channels, laid with the web horizontal. The side posts are made of 4-inch I-beams, two for each wide pier, and a single beam for the narrow piers. These posts are continuous from the side sill to the plate, the upper part forming the carline for the side deck. The pier covers in the side finish between windows are 1-16-inch steel plate and are put on with countersunk rivets.

The deck sill consists of a T-iron extending continuously between the body end plates, and is secured to the ends of the side post, thus forming the carlines of the side roof. The carlines in the upper deck are 1-16-inch pressed steel of channel section, and they also form the deck posts at the double piers, but at the narrow piers the deck posts are flat bars. The purlines are 1-16-inch pressed steel in channel shape and the roof is of galvanized iron with copper flashing. There are two end posts of 4-inch I-beams located under the deck sill and secured to it and to the body corner post; at the bottom they are fastened to a 4 by 4 inch angle, which is riveted to the body end sill casting.

The platforms are fitted with the Forsyth buffing device and radial centering device, and the couplers are fitted with the Westinghouse friction draft gear. There is a double floor construction, the deadening floor being placed on top of the cross bearers and floor beams and above this is the floor of the car formed of monolith cement laid on corrugated iron of Keystone section. The insulating material in the sides and ends consists of two thicknesses of asbestos board placed between the sheeting and extending from the side sill to the side plates. This construction has contributed materially to making the car ride very quietly and it will also overcome the objection to steel construction in preventing any discomfort due to extremes of heat and cold. The seat frames are of pressed steel. The plush seat cushions and the carpet are of old rose color. The window sashes are made of brass. The side paneling is of steel plates, pressed with simple moldings. The upper deck is of aluminum in semi-empire

The First Steel Pullman Sleeping Car—Exterior View.

RAILWAY AGE
APRIL 19. 07.

THE FIRST STEEL PULLMAN SLEEPING CAR.

The steel sleeping car which the Pullman Company recently completed has attracted unusual attention from railroad officers not only because the car is constructed entirely of metal, but on account of the decorative features which have all the beauty of graceful outline and pleasing color treatment which are characteristic of recent Pullman cars

The First Steel Sleeping Car—Interior View of the Main Body of the Car.

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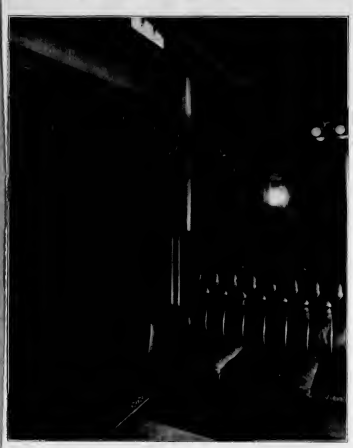
The First Steel Pullman Sleeping Car—Exterior View.

style. The lower deck ceiling is of composite board and the berth fronts are made of thin steel sheets. All this inside metal work is painted a pearl gray with gold ornamental lines.

The trucks are of the standard Pullman 6-wheel type, but have cast-steel frames and bolsters, supplied by the Commonwealth Steel Company. The wheels are 38-inch Paige with Latrobe steel tires. The axles are M. C. B. standard with 5 by 9 inch journals, and the brakebeams are the Diamond special. The brakes are the Westinghouse high-speed, with a braking power equal to 90 per cent the weight of the car.

The design and construction of a Pullman car entirely of metal was a very difficult problem and the Pullman Com-



The First Steel Sleeping Car—Interior View of Men's Toilet Room.

pany is to be congratulated upon the very successful result of its first attempt to produce a fireproof car.

The principal dimensions of the car are:

Length over end sills	72 ft. 6 in.
Length over platforms coupled	80 ft. 6 in.
Width over side sills	9 ft. 9¼ in.
Height over all	14 ft. 7 in.
Width over all at eaves	10 ft.

Tonopah & Goldfield, it is reported, has ordered six cabooses from the Pullman Company, and is in the market for 150 box cars.

Sierra Madre Land & Lumber Company, New York, has placed an order with the Pullman Company for 150 box cars.

RAILWAY REVIEW APRIL 20.07

Great Northern.—A bill of complaint in which a receivership is asked for the Great Northern by C. H. Venner has been filed in the Ramsey county district court at St. Paul, Minn. The defendants in the action are the Great Northern Railway Co., the Lake Superior Co., Limited, and the officers of both companies. The burden of the complaint made by the plaintiff is that the Great Northern in forming the Lake Superior company attempts to evade the purposes of its charter by giving that company control of securities and properties owned by the Great Northern company which under the law it has no right to own, particularly mining and timber lands.

RAILROAD GAZETTE
APRIL 26.07

The Colorado Southern, New Orleans & Pacific has ordered 12 passenger, four baggage and four combination baggage and mail cars from the Pullman Co.

25

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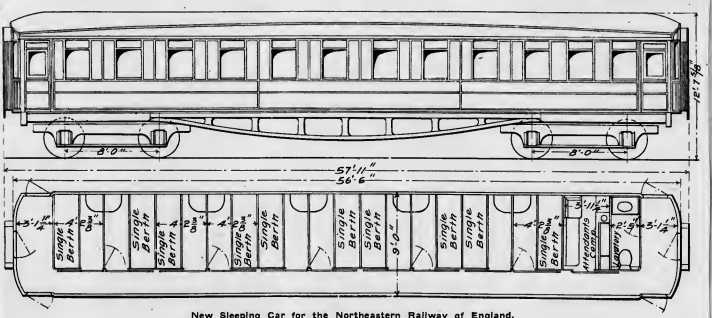
NEW SLEEPING CAR FOR THE NORTHEASTERN RAILWAY OF ENGLAND.

There has recently been completed at the York works of the Northeastern Railway of England the first of a new type of sleeping cars which have been specially designed for operation on the East Coast Scotch express services between London and Edinburgh, Glasgow, Perth, Inverness, Dundee and Aberdeen. In the construction of these cars several

New Sleeping Car for the Northeastern Railway of England.

features which are novel to British rolling stock design have been incorporated, and the interior furnishing and equipment are unusually elegant. The accompanying engravings were obtained through the courtesy of Mr. Wilson Worsdell of Gateshead, the chief mechanical engineer of the Northeastern line, from whose designs the vehicles have been built. A new type of underframe is utilized, which, having considerable vertical and transverse rigidity, is claimed to be free from the varying deflections and the working of parts under shocks which are incidental to British high-speed travel. The main features of this type of frame are that the side sills are made of two angles, the lower being set downward to the outline of a parabolic curve and connected at intervals to the upper by means of distance pieces which divide the span between the bogie centers into eight panels. These distance pieces are cross-braced by a system of triangulation built up of angle bars. The main transoms over the bogie pivots are of channel section, and the inner longitudinals are of Z-section. By this type of underframe there is obtained an increased space for the Westinghouse airbrake and vacuum brake, for the electric lighting machinery and the reservoir for gas required in the heating of water for the lavatories and cooking purposes.

The Northeastern management has never favored six-wheeled trucks for its passenger stock, as have several of the other leading British railways, preferring to use the four-wheeled trucks which the Northeastern claims as making less noise in hammering over the rail joints, while they are equally stable as the six-wheeled trucks, provided the wheel base is equally long, and there is less grinding on the rails. These carriages are the longest sleepers in Great Britain carried upon four-wheeled trucks. They have the following leading dimensions: Length, over vestibules,



New Sleeping Car for the Northeastern Railway of England.

57 feet 11 inches; over end sills, 55 feet; extreme width, 9 feet; distance from rail level to top of center of roof, 12 feet 7 inches, and to top of ventilators, 12 feet 11 inches. The truck wheels are 42 inches in diameter; the truck wheel base is 8 feet, and the distance between truck centers 39 feet 6 inches. Each car accommodates ten passengers in single-berth compartments, each compartment having an inside width of 4 feet 2⅝ inches and a length (inside) of 6 feet 1⅝ inches. There is an attendant's compartment, and a lavatory at one end of each vehicle. Vestibule face plates and Gould couplers of the standard joint service type are used. The interiors of the berths have an increased air space by reason of the wide sweep of the elliptical-shaped roof. Lighting is supplied by means of three electric lamps in each compartment, carried in brackets of oxidized silver, and disposed in such a manner as to afford a reading light for the bed, and favorable illumination at each side of the dressing table. Either one, two or three lamps may be used, or the light in the compartment reduced by the passenger to a dull glow, if a night light only is desired. In the designing of this stock, precautions were taken to reduce the noise and vibration and all void spaces were packed with insulating material. The sliding doors in the corridors have been hung from a polished glass strip which runs in a wood-lined metallic channel, and the noise which usually accompanies the working of ball and roller bearings is therefore absent.

Illinois.—The house committee on railroads has reported favorably the bills to reduce sleeping car rates; to require that railway employes be given at least eight hours' rest after a day's work; and fixing the number of employes who shall constitute crews on the various kinds of trains.—The house has passed the 2-cent fare bill.

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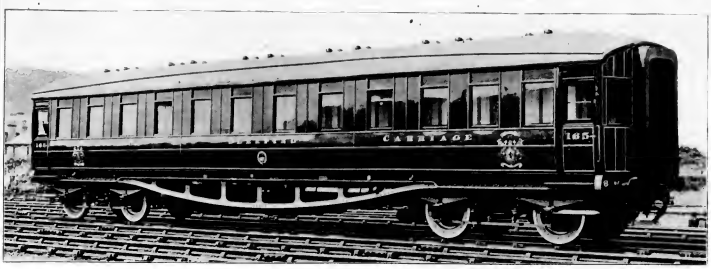
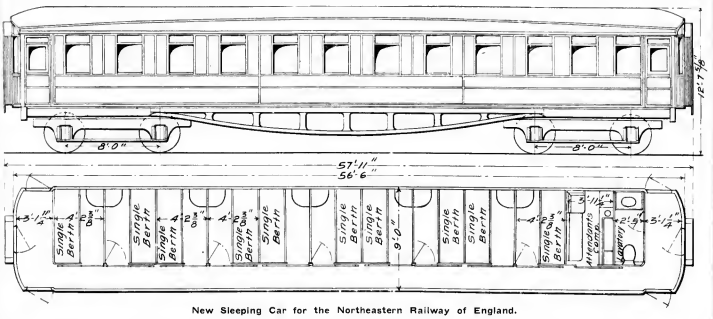


New Sleeping Car for the Northeastern Railway of England.



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RAILWAY REVIEW
APRIL 20.07

—The Pullman company has declared a quarterly dividend of two dollars per share from net earnings, payable May 15, 1907, to stockholders of record at close of business April 30, 1907.

RAILWAY AGE MAY 2.07

Minnesota.—Both houses passed the bill to provide for a 4 per cent tax on the gross earnings of the state business of sleeping car companies and on a proportion of their interstate gross earnings based on mileage. The sleeping car companies are given the alternative of paying an ad valorem tax.

RAILROAD GAZETTE
MAY 10.07

B. P. Cheney, a Director of the Atchison, Topeka & Santa Fe, has ordered one private car from the Pullman Co.

The Idaho & Washington Northern, Coeur d'Alene, Idaho, has ordered two first class coaches, one smoking car and one baggage car from the Pullman Co.

RAILWAY REVIEW.
MAY 11.07

All-Steel Private Car.

The new private car for Colonel J. M. Schoonmaker, vice president of the Pittsburg & Lake Erie Ry. has been completed at the Buffalo shops of the Pullman Car Co. and turned over to the railroad. There was practically no wood used in its construction and is as nearly as may be absolutely fire and telescope proof. It is finely furnished and is equipped with electric lights and telephone.

RAILWAY AGE MAY 17.07

Western Union and Pullman Companies Ordered from Kansas.—Writs of ouster were issued against the Western Union Telegraph Company and the Pullman Company by the supreme court of Kansas on May 11 for refusal to comply with the Kansas corporation laws. The Kansas corporation laws require that before a foreign corporation may do business in the state it must secure a license from the state charter board. A charter fee based on the capital stock of the company must be paid to secure a license, the amount demanded from the Pullman Company being $19,000 and from the Western Union $20,000. The attorney-general brought suit two years ago to compel the payment of these fees. The companies tried to transfer the cases to the federal courts, but Judge Pollock of the United States court of Kansas refused to take jurisdiction. He held that no federal question was involved, the controversy being relative merely to the right of the state to regulate corporations doing business within its limits. It is expected that both companies will appeal to the United States supreme court.

RAILWAY AGE MAY 24.07

Assessment of Indiana Railways Increased $8,000,000.—The state board of tax commissioners of Indiana on May 18 announced that it would assess the railways doing business in Indiana an aggregate of $191,337,619. This is an increase over the assessment of last year of nearly $8,000,000, the assessment in 1905 being $183,670,955. The assessment of sleeping car companies was increased from $652,907 to $867,290; and that of interurban railways from $20,816,599 to $20,990,004. The assessment of the Western Union Telegraph Company was reduced from $3,337,323 to $2,598,300.

H. P. Walden has been appointed purchasing agent of the Pullman Company, to succeed the late W. A. Hughes.

Idaho & Washington Northern, Coeur d'Alene, Idaho, has placed an order with the Pullman Company for three coaches, each 70 feet in length over end sills, and one baggage and express car, 60 feet in length over end sills. These cars will be equipped with Pullman trucks, Page wheels, Westinghouse friction draft gear, Forsythe couplers and the Elias system of electric lighting in the coaches. The company has also placed orders for 100 wooden frame flat cars, 41 feet in length and of 80,000 pounds capacity, and 25 wooden frame box cars, 40 feet long and of 80,000 pounds capacity, from the Haskell & Barker Car Company, for May and June delivery, and 25 steel cars, 40 feet in length and of 100,000 pounds capacity, from the Ralston Steel Car Company for May delivery.

RAILWAY AGE
JUNE 14.07

The advantages of not letting the right hand of public authority know what its left hand is doing are exemplified in Texas. The tax commission of that state has fixed a valuation of the properties of the railways for purposes of taxation about twice as high as that made by the railroad commission as a basis for rate regulation. Grinding the railways between the upper millstone of taxation and the nether millstone of rate reduction is being raised to a fine art in various states. We believe, however, that the officials of Texas were the first to make the interesting discovery that property is worth more when it comes to taxing it than when it comes to deciding how large profits it shall be permitted to earn. The Galveston News is concerned regarding the impression the discrepancy between the views of the tax commission and the railroad commission regarding the value of the property of the railways will make on the outside world. It fears it may be thought that there is a disposition in Texas to gouge corporations and capital in every way that can be devised. There is much ground for the apprehensions expressed. The latest development tends to confirm the already prevalent opinion that Texas is an excellent field for capital to avoid.

With its great latent natural resources the state needs the extension and development of its railways as much as any other portion of the country. Can its officials and people seriously expect that the capital necessary to give this vast state adequate transportation facilities will be forthcoming so long as they continue to manifest such unreasonable and unfair hostility to the capital already invested?

Steel Sleeping Car.

In order to complete its equipment of steel cars for passenger trains, the Pennsylvania Railroad has arranged with the Pullman Company to design and build all-steel parlor and sleeping car equipment. A sample sleeping car has recently been completed and is now at the Jamestown exposition.

In both exterior and interior appearance it closely resembles the standard wooden car, except perhaps in the delicate pearl gray interior finish, which replaces the highly polished natural wood.

Inside sheathing is of sheet steel, backed by asbestos board, to act as a non-conductor of sound and heat. Seat frames and berth fronts are of sheet steel, and window sashes are of brass provided with automatic spring balances.

Trucks are of standard Pullman type supplied with cast-steel frames and bolsters, in place of the usual wooden members.

The principal dimensions of the car are:

Length over end sills	72 ft. 6 in.
Length over platforms, coupled	80 ft. 6 in.
Width over side sills	9 ft. 9¾ in.
Width over eaves	10 ft. 0 in.
Height over all	14 ft. 7 in.

RAILROAD GAZETTE
JUNE 14.07

STEEL PASSENGER CARS

The Pennsylvania's recent order for 200 steel passenger cars of various types, which are illustrated elsewhere in this issue, marks the beginning of a period of standardization in the evolution of passenger car construction for regular road service from wood to steel. The New York Subway, the Philadelphia Rapid Transit Company, the Long Island, the New York Central and the West Jersey & Sea Shore have a large number of steel motor cars in use. The Harriman lines have built a few sample postal cars; the Pressed Steel Car Company, the Pullman Company, the American Car & Foundry Company and the Standard Steel Car Company have each built a few experimental cars of various types, but no railroad or contract builder up to this time has built a sufficient number of road-service cars to term the design standard. There is little likelihood that in the future the Pennsylvania will depart widely from the designs now proposed. They are the result of nearly four years of experiment and analysis by the largest and best equipped mechanical department of any railroad in the United States. The fact that 200 cars have been ordered is sufficient proof that the railroad company is satisfied with its careful and painstaking work.

In steel passenger-car design there is a temptation to substitute rather than originate, but, on the other hand, there is great opportunity for employing new and original shapes and types of construction to excellent advantage. Nearly every designer has departed in some details from the old wooden construction which, after a period of more than 25 years, has become practically standard throughout the United States. The Harriman lines have abandoned the upper-deck and have gone back to the turtle back or arched roof of 30 years ago because it simplifies and cheapens the roof framing. The Pennsylvania has abandoned bolsters and substituted a method of symmetrically loading the center sills to give uniform deflection. The Hudson Companies have developed an economical truss side-frame which permits the use of side doors without using abnormally heavy center sills to carry the vertical load. Similar departures from wooden construction could be noted in almost every car which has so far been built. It is not alone in these essential elements, however, that the ingenuity of the individual designers is apparent. No two designs employ the same intricate construction in the window and door posts, in the platform, framing or in the application of sheathing and roofs. The ingenuity of the designers of these cars appears to be limited only by the scarcity of suitable commercial shapes in structural steel. Some have even gone so far as to have special shapes rolled, notably the special bulb angles used as belt rails under the windows of the Subway and Long Island cars. Pressed steel has been employed in many places where rolled shapes apparently did not satisfy the ideas of the designer.

All these variations in detail go far toward increasing the expense of manufacture of steel cars and, for the time being at least, almost limit their adoption as standard equipment to roads like the Pennsylvania, which can afford to order them in large numbers. The wood passenger-car builders have long since standardized nearly every detail of such cars and they are built, so to speak, by the foot. It is a fact that one large building company lays out all the timbers for the body and underframing of its cars with notched sticks and templates. So uniform is the output that it is able to make up ahead a large stock of finished parts and cars can be turned out at the minimum expenditure of time and money. The same thing is true to a great extent in freight-car construction, although the types and individual designs sometimes vary considerably. This similarity of output is not confined to any one builder, but the output of all the builders is substantially standard. In passenger-car construction, the framing perfected after many years by the Pullman Company has been found to be the most satisfactory and is used almost exclusively.

If steel passenger cars are to come into general use, the same conditions of manufacture must soon begin to prevail, otherwise the output of the car building plants will be greatly reduced and the cost to the railroads increased. We will not attempt to say how this should be brought about. It is hardly within the province of the Master Car Builders' Association to arbitrarily adopt specific details of construction either as standards of the association or as recommended practice, but the Association could do much good through committees in collecting and analyzing the different designs proposed and encouraging the closest co-operation on the part of the railroads and the contract builders in preparing and adopting designs which, in the future, might be capable of being more or less closely standardized. Encouragement should be given to individual effort, but such effort should be guided toward one objective point.

The Atchison, Topeka & Santa Fe has ordered three café cars from the Pullman Co.

The Chicago Great Western, as reported in the *Railroad Gazette* of May 31, has ordered 1,000 wooden box cars from the Pullman Co.

RAILWAY REVIEW
JUNE 15.07

It is so seldom that a railroad company is patted on the back by a state commission that no instance of that kind should escape wide publicity. The Texas Central R. R. has informed the railroad commission of Texas that it has cancelled its contract with the Pullman Company for the use of its sleeping cars, effective in thirty days, having bought sleeping cars of its own, to be delivered July 1. Application is made to the commission to adopt a rate of $1.50 for lower berths and $1.00 for uppers, between Waco and Rotan, a distance of 268 miles. The commission is so well pleased at this that it has drawn up and voted a lengthy set of resolutions commending the Texas Central road for its good management and its good behavior to the commission. Seeing that a railroad commission can be an appreciative body it may profit other common carriers to learn wherein the said railroad has made its record of merit, and here it is, to wit: The Texas Central R. R. is "independently managed and not owned or controlled by any other railroad or holding corporation," and it "has uniformly observed and obeyed the orders, rates, rules and regulations of the Railroad Commission of Texas; and has not litigated with or complained at the regulations and rates promulgated by said commission." Nevertheless the said road has prospered exceedingly and has developed a territory at one time but sparsely settled. The road now has outstanding $17,506 worth of stock and $2863 worth of bonds, on the average per mile of road, or a total capitalization of but $20,369 per mile. The gross earnings are $4164.05 per mile. The stock, common and preferred, pays, and has for several years paid, 5 per cent. When the commission recently ordered a 20 per cent reduction of sleeping car fares on all the roads of the state the Texas Central R. R. did not even put in an appearance at the hearing, or protest in any way. Howbeit other railroads with double the earnings of the Texas Central did strenuously insist and persistently claim in federal court proceedings that they were not financially able to purchase sleeping cars of their own. "Therefore, be it resolved, by the Railroad Commission of Texas (Commissioner Storey dissenting), That we congratulate the management of the Texas Central R. R., its directors and stockholders, upon the success indicated, and for their obedience to and respect for the law, and also congratulate them upon the successful management of their property and point to the same as being the result of independent ownership and management." In short, little Texas Central has done well by obeying his teacher, but some of the larger scholars won't he good.

RAILWAY AGE JUNE 21.07

Pullman Company Denies that it is a Common Carrier.

The Pullman Company has filed with the interstate commerce commission answers in the cases brought against it by George S. Loftus, which were mentioned in The Railway Age of May 31, 1907, page 861. The Pullman Company denies that it is a common carrier and contends that its operations are not subject to regulation or control by the interstate commerce commission. It denies the allegations of Mr. Loftus that its rates for berths are excessive or unjust, and also combats the allegations that a charge for an upper berth which is equal to the charge for a lower berth is discriminatory or unfair. ..he answer of the Pullman Company is taken to mean that it intends to contest in the courts the constitutionality of the provisions of the Hepburn act which apply to it. The Hepburn act specifically provides in Section 1, Paragraph 2, that "the term 'common carrier,' as used in this act, shall include express companies and sleeping car companies."

RAILROAD GAZETTE JUNE 28.07

Dressing rooms in sleeping cars.—Applying the rule that while a carrier is required to use the utmost diligence and care in providing reasonably safe cars, it is not an insurer of the absolute safety of its passengers, but has discharged its duty in respect to its cars when it has supplied the best instrumentalities that a highly prudent person would have supplied in the same business in the then known condition of the business, the Circuit Court of Kentucky

The Las Vegas & Tonopah recently ordered three coaches and three baggage cars from the Pullman Company.

RAILWAY AGE
JUNE 28.07

How far may the prohibition of "discrimination" between its patrons by a carrier be urged without becoming farcical? In a complaint brought against the Pullman Company before the interstate commerce commission, by a traveling man, one allegation is that a charge for an upper berth which is equal to the charge for a lower berth is discriminatory and unfair. Nearly everybody will admit, sleeping car owners included, that the lower berth is more desirable than the upper, although except in the matter of elevation there is no appreciable difference in the character or the cost of construction and equipment of the beds offered. If the sleeping car agent or conductor, through favoritism or bribery, assigned to one applicant a lower berth and to another an upper, while lowers still were untaken, his action would be discriminatory, unfair and punishable. But the accommodatons are offered to the public simultaneously on the same terms, "first come first served," and those who do not apply in time to get the best places have the option of taking or declining what is left.

Similar principle and practice apply to the accommodations in parlor car or coach. Everybody prefers a seat on the shady side in summer, the sunny side in winter, the lake view side, or the best side generally; nobody chooses to ride backward in the middle of a lounge in a parlor car; while not to be able to get a seat by the window in the ordinary coach, and, indeed, not to have the double seat alone, makes the journey a vexation to most people and arouses animosity to the railway for not having all seats single and next to the window, on the pleasanter side. Yet the railway coolly charges the same for the exasperating seat on the aisle as for the cozy corner at the window, and even demands twice as much from two or two and a half crowded travelers on one seat as from the early comer occupying a double seat in selfish comfort.

Undoubtedly there is discrimination between passengers in these cases. Perhaps absolute justice would demand that every sitting in every car should be scheduled according to its relative desirability of location, due regard being given to season of year and the day's weather; so that the woman with a baby who got the window seat ahead of you and the fat drummer with his grips who hogs the whole seat and rides on a cheap mileage ticket, while you sit on the coal box and pay full fare, should be taxed according to the degree of their comfort. Maybe this would be justice, but it hardly would be reason. Perhaps sleeping car rates are too high on some runs—certainly there is great lack of uniformity in these rates, considering either distance or time—but the theory of charging two different prices for berths or seats seems open to question as to both abstract justice and practical workability.

Somewhat similar in complexity is the demand for injunction to prevent the dark autocrats of the sleeping car from lowering the upper berth for the night unless it is needed for occupation. Without considering the arguments from analogy which the sleeping car people like to urge, as for example that the hotelkeeper might likewise be compelled to throw open the vacant connecting apartment to the guest who pays for but one room, it may be permissible to suggest a possible conflict between the two-price berth plan and that of two-berth space for one-berth price. For when the smart traveling man, having secured the cheaper upper berth, found that the lower was unoccupied, could he not, with abstract justice, insist that the sleeping car company should raise the offensive upper berth and give him the use of the whole section, thus getting accommodations priced at $4.00 for, say, $1.50?

It will be interesting to follow the workings of the interstate commerce commission's judicial mind when it makes its ruling upon these and like changes of discrimination, injustice and extortion on the part of the various corporations, Pullman and railway, operating the traveling hotels or lodging houses commonly called sleeping cars.

JULY 5. 07

Pullman Company Withdraws Passes in New York.—The Pullman Company has sent a circular letter to all members of the New York legislature withdrawing the passes which it had issued to them. The notice was effective on July 1. The company states that it takes this action to comply with the public utilities bill.

RAILROAD GAZETTE
JULY 15. 07.

The Arms Palace Horse Car Co., Chicago, as reported in the *Railroad Gazette* of June 7, has ordered 10 express horse cars of

It is said that the Pullman Company is figuring on plans for a steel car plant at Hammond, Ind.

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RAILWAY AGE
AUG 2. 07

Taxation of Sleeping, Dining and Parlor Cars.—Sleeping, dining and parlor cars are to be taxed on a mileage basis, according to the average value of the cars used in the state during the year preceding April 1. Every person or corporation operating the cars of these classes must make a report in each month of June, showing the average number and value of each class of cars used within the state during the year ending the preceding March 31, the total number of miles of track within and without the state over which cars were used and the number of miles of tracks over which they were used within the state.

New Mexico.

Extension of Lines.—It is provided that any railway company, legally operating within the territory, may extend its main line or branches upon filing a formal statement and map of the proposed extension in the office of the secretary of state. The filing of these documents gives prior claim upon the proposed right of way.

Taxation.—The valuation of a standard sleeping car was fixed at $5,000, and of a tourist sleeping car at $1,500. The rate of taxation was fixed at $1.50 on each $100 valuation. Taxes are to be levied upon cars in the proportion which the number of miles of track on which they are used in the territory bears to the total number of miles of track within and without the territory upon which they are used. The number of cars to be taxed is to be determined by the reports which sleeping car companies are required to make for each year ending March 1.

AUG 9.07

San Antonio & Aransas Pass has placed an order for 10 coaches with the Pullman Company.

RAILROAD GAZETTE
AUG 9. 07

The state of Arkansas, like Alabama, has a law designed to prevent railroads from transferring law suits from the state to the federal courts, the penalty being the forfeiture of the property of the company to the state. The Chicago, Rock Island & Pacific offended in this respect recently, and the Secretary of State started to apply the law; but, on application to the United States Circuit Court at St. Paul, August 5, the road secured an injunction against the Secretary of State, hearing on the injunction to be held at Little Rock, October 2.

RAILWAY AGE
AUG 16. 07

WORK OF THE GEORGIA LEGISLATURE.

The Georgia house, on August 9, by vote of 98 to 68, passed as an amendment to the general tax act a measure imposing a tax of 1 per cent upon the gross receipts arising from all business done within the state by all railroads and street railways, such tax to be paid monthly, commencing in January, 1908. The house had previously defeated, by 83 to 84, a similar measure proposing an occupation tax of 1 per cent on the gross receipts of railroads and also of all other public utility companies, such as water power, electric lighting, etc. The amended bill, confining the tax to railroads only, was urged on the ground that there are from 5,000 to 10,000 public school teachers in the state who have not been paid since January, and who are compelled to sacrifice their state scrip to money sharks. Passage of the bill in the senate is said to be assured. The measure—called an occupation tax—was recommended by Governor Smith in a special message.—The house also adopted a provision for the general tax act requiring the taxation of sleeping cars of non-resident companies, on the following plan. "Ascertain the whole number of miles of railroad over which sleeping cars are run, and ascertain the entire value of all sleeping cars of such company, or such person or company, then tax such sleeping cars at the regular tax rate imposed upon the property of this state in the same proportion to the entire value of such sleeping cars that the length of lines in this state over which such cars run bears to the length of lines of all railroads over which such sleeping cars run. The returns shall be made to the comptroller general, president, general agent or person in control of such cars in this state. If the officers above referred to shall fail or refuse to answer, under oath, the questions propounded, the comptroller general shall obtain the information from such sources as he may, and he shall assess a double tax on such sleeping cars. If the taxes herein provided for are not paid, the comptroller general shall issue executions against the owners of such cars, which may be levied by the sheriff of any county of this state upon the sleeping car or cars of the owner who has failed to pay taxes."—The house also passed the following provision for the taxation of private cars: "Any person or persons, copartnership or corporation, wherever organized or incorporated, whose principal business is furnishing or leasing any kind of railroad cars except dining, buffet, chair, parlor or sleeping cars, or in whom the legal title in any such cars is vested, but which are operated, or leased, or hired to be operated on any railroad in this state, shall be deemed an equipment company. Every such company shall be required to make returns to the comptroller general under the same laws in force in reference to the rolling stock owned by the railroads making returns in this state, and the assessment of taxes thereon shall be levied and the taxes collected in the same manner as provided in the case of sleeping cars in Subsection 2 of this section."

AUG 23. 07

Upper Berths in Sleeping Cars.—The occupant of a lower berth in a sleeping car is given the right to direct whether or not an unoccupied upper berth over him shall be kept open or closed.

New York New Haven & Hartford is reported to have recently placed a large order for new equipment, including 7,500 freight and refrigerator cars, 100 coaches, 40 Pullman sleepers and two special sleepers.

RAILWAY REVIEW
AUG 31.07

—The shops of the Pullman Company, in Denver, Colo., the largest in the West, were burned Aug. 24.

RAILWAY AGE
SEPT 6.07

Railways Claim that Federal Control is Exclusive.

The question of the extent of the federal jurisdiction over interstate railways is raised directly in a case which the Missouri Pacific has appealed from the Kansas supreme court to the United States supreme court. It is believed that this is the first case directly involving this question which has reached the federal supreme court. The Larabee Milling Company of Stafford, Kan., has a mill on a spur leading from the Missouri Pacific's main line. The Atchison Topeka & Santa Fe crosses the Missouri Pacific at about one mile from the mill. The Missouri Pacific some months ago discontinued delivering cars from the mill to the Santa Fe's tracks, a service which it had rendered for years at the rate of $2.00 per car. The Kansas supreme court issued a writ of mandamus to compel the Missouri Pacific to resume the rendering of this service; and it is from this action that the Missouri Pacific appeals. The Missouri Pacific contends that the Hepburn act deprived the various states of such authority as they had previously exercised over instrumentalities of interstate commerce, and gave exclusive control and supervision over those instrumentalities to the Interstate commerce commission, and that therefore the Kansas court was without jurisdiction in the case.

SEPT 13.07.

Hearing Regarding Sleeping Cars in Texas.—The railroad commission of Texas issued an order on September 3 requiring the railways doing business in the state to show cause at a hearing on Octoher 8 why an order should not he made hy the railways doing business in the state to show cause at a hearing on October 8 why an order should not be made by the commission requiring them to purchase all the sleeping car equipment needed to handle the husiness upon their lines. The commission some time ago ordered a reduction of the rates charged by sleeping car companies, hut the Pullman Company secured an injunction from the federal court at Dallas, which has thus far prevented enforcement of the order. In the case of Allen versus Texas & Pacific the state supreme court recently held: "That under the law and constitution a Texas railroad's duty to its patrons is to furnish cars to do the husiness it holds itself out to perform, and that its duty is to furnish sleeping cars of its own to accommodate travelers desiring to use same hetween points in this state. And that on such sleeping cars the state has the power to fix the charges to be collected." Having failed to secure a reduction in rates by the Pullman Company, the commission has determined to seek its object hy another route.

RAILWAY REVIEW
SEPT 14. 07

Texas Commission Rulings.

On Sept. 7, a general order was issued by the Texas railroad commission, ordering the proper authorities, whenever a freight or passenger wreck occurs, to make a telegraphic report of the cause and the number of persons killed and injured to the railroad commission. As soon as the details are learned a written report of the cause. the number of the killed and injured must he made. Within the next few days the railroad commission will issue an order providing rules for reciprocal demurrage, the interchange of cars hetween railroads

RAILROAD GAZETTE
SEPT 20.07

The San Antonio & Aransas Pass, as reported in the *Railroad Gazette* of July 26, has ordered 10 coaches from the Pullman Company.

The Grand Trunk, as reported in the *Railroad Gazette* of September 6, has ordered 25 coaches from the Pullman Company.

RAILWAY AGE.
SEPT 27.07

Long Sheets Required on Sleeping Cars in Pennsylvania.—Dr. Samuel G. Dixon, state health commissioner of Pennsylvania, issued an order on Septemher 20 directing that sheets in the herths of sleeping cars running through Pennsylvania must hereafter he long enough to turn over at the upper end of the hlanket at least two feet so as to prevent the hlanket from coming in contact with the face of the occupant of the herth. The order also directs that porters on parlor cars must not brush the clothing of passengers in the aisles of the cars, hut only at the end of the coach heyond the seats. The order, it is stated, is designed to protect the traveling puhlic from communicahle diseases.

RAILROAD GAZETTE
SEPT 27 07

The state health commissioner of Pennsylvania has ordered that sheets in sleeping cars must he long enough to turn over at the upper end 24 in. As the only sleeping cars in Pennsylvania are those run hy the Pullman Company, in which the blankets are covered with sheets their whole length, this order would seem to be rather behind the times. The health commissioner also orders that in parlor cars the porters must not brush the clothing of passengers, except at the end of the car. Nothing is said about the application of a rule of this kind to sleeping cars. Probably the commissioner recognizes this as a problem too tough to be tackled offhand.

The Canadian Pacific has ordered from the Pullman Company eight first-class cars, without smoking rooms; eight second-class cars, five colonist cars and four baggage cars. The first-class cars will measure 65 ft. long and 9 ft. 10½ in. wide over frames, with varnished mahogany outside finish and mahogany interior. The second-class cars will have the same measurements and finish. The colonist cars will measure 67 ft. long and 9 ft. 10½ in. wide, over frames, and will have varnished Douglas fir outside finish and birch, mahogany stained interior. The haggage cars will measure 60 ft. long and 9 ft. 10½ in. wide, over frames, and will have the same specifications as the haggage cars reported in the *Railroad Gazette* of August 24, 1906, except that they are to be heated hy direct steam, lighted hy Pintsch gas, and that steel backed Diamond S hrake-shoes are to he used. Bodies and underframes of all cars will be of wood. The special equipment for all cars except the baggage cars includes:

Body bolsters	Double, C. P. R. standard
Truck bolsters	
Brake-beams	
Brake-shoes	Double
Brakes	Simplex
	Steel backed, diamond S, flanged
Center bearings	Westinghouse, high speed
Couplers	One of malleable iron and one of steel
Curtain fixtures	Tower
Curtain material	Forsyth
Draft rigging	Pantasote
Dust guards	Miner tandem with M.C.B. class "G" spring
Hearing system	Harrison
Journal boxes	Steam
Roofs	Steamli
Side bearings	Elliptic
	C. P. R. standard canvas covered
Springs	Four-wheel
Trucks	Peige
Wheels	Standard Coupler Co.
Lighting system	Pintsch gas with incandescent mantels
Platforms	Wheeler for first-class and second-class, and C. P. R. standard for colonist cars
Seats	Pullman wide
Vestibules	

RAILWAY GAZETTE
SEPT 28. 07

Mr. E. I. Dodds, mechanical engineer of the Pullman Co., has been appointed assistant mechanical superintendent of the Erie Railroad, with office at Meadville, Pa.

In Omaha, Neb., Sept. 21, the Travelers' Protective Association filed complaint with the Nebraska railway commission against the Union Pacific, charging that line with refusing to haul any but personal baggage on limited trains, and asking that the road be ordered to place chair cars on these trains so that passengers will not be forced to purchase Pullman seats.

RAILROAD GAZETTE
Oct 18.07

The Idaho & Washington Northern has ordered four cahooses from the Pullman Co.

The San Antonio & Aransas Pass, as reported in the *Railroad Gazette* of Septemher 20, has ordered six passenger coaches from the Pullman Company for January, 1908, delivery. These coaches will measure 60 ft. long, 9 ft. 8 in. wide and 14 ft. 1½ in. high, inside measurements. The special equipment includes:

Bolsters	Commonwealth
Brake-beams	Carmegie
Brake-shoes	Lappin
Brakes	Westinghouse
Couplers	Janney
Curtain fixtures	Forsyth
Curtain material	Pantasote
Door fastenings	Pullman standard
Journal boxes	Symington
Light	Pintsch
Paint	Murphy Varnish Co.
Platforms	Standard Steel
Roofs	Standard Steel Works
Springs	S. A. & A. P. standard
Trucks	S. A. & A. P. standard

RAILWAY AGE
Oct 25 07

Chicago & Northwestern has placed an order for 25 passenger coaches with the Pullman Company.

Union Tank Line, New York, is asking prices on from 600 to 800 tank cars of 80,000 pounds capacity.

San Antonio & Aransas Pass, it is reported, has placed an order with the Pullman Company for six passenger coaches.

RAILROAD GAZETTE
OCT 25. 07

The Chicago & North-Western has ordered 25 passenger coac from the Pullman Co.

The Harriman Lines, as reported in the *Railroad Gazette* of October 18, have ordered 16 passenger cars from the American Car & Foundry Co. and 10 from the Pullman Co.

The Idaho & Washington Northern, as reported in the *Railroad Gazette* of October 18, has ordered four cabooses from the Pullman Company, for November delivery. These cabooses will be 34 ft. 9½ in. long, 9 ft. 10¼ in. wide, over all, and 14 ft. 4¾ in. high, over cupola. The special equipment includes:

Brakes	Westinghouse
Couplers	Tower
Draft rigging	Westinghouse friction

RAILWAY AGE
NOV. 8. 07

South Manchuria Railroad has purchased a number of coaches, including diners, sleepers, passenger and baggage and baggage and mail coaches, from the Pullman Company.

New York Ontario & Western, which was reported in The Railway Age of October 4 as being in the market for 10 passenger coaches, has postponed the purchase of these cars indefinitely.

San Antonio & Aransas Pass, as reported in The Railway Age of October 25, has placed an order with the Pullman Company for six passenger coaches. The order was placed October 8 and delivery is to be made in January, 1908. The specifications include the following details:

Capacity .....70 passengers	Height, inside.....6 ft. 8 in.
Length over all.....60 ft.	Body .....Wood
Width over all.....9 ft. 8 in.	Underframe .....Wood

Special Equipment.

Axles .....Pullman standard	Springs.Standard Steel Wks.
Brakebeams.Diamond special	Trucks .....
Brakeshoes .....Christie	...Commonwealth Steel Co.
Brakes .....Westinghouse	Wheels .....Cast Iron
Couplers .....National	Curtain fixtures.....Forsyth
Dust guards.....Positive	Curtain material...Panta-ote
Journal bearings.....M. C. B. standard, lead lined	Heating system.....Consolidated Car-Heating Co.
Journal boxes.....Symington	Lighting system.....
Roofs.....Company standard	.....Pintsch Improved
Paint....Murphy Varnish Co.	Platforms .....Steel

RAILROAD GAZETTE
NOV 8. 07

The Tonopah & Goldfield has ordered four chair, one smoking and one baggage car from the Pullman Company.

The South Manchuria has ordered through Mitsui & Co., New York, three dining, three sleeping, six passenger and baggage, four baggage and mail cars and six coaches from the Pullman Co.

CHARLES ELLIOTT PERKINS.

Charles Elliott Perkins, for 20 years president of the Chicago Burlington & Quincy Railroad Company, died at his home, Ricefield, at Westwood, Mass., on November 8, at the age of 67 years, less 12 days. Mr. Perkins' life was spent in the upbuilding of the Burlington system, in which he was for many years the chief power, and the Burlington system is a most enduring monument to his work.

Mr. Perkins was born at Cincinnati, O., on November 24, 1840; his parents were both descended from old Puritan stock. Leaving school when 16 years old he worked as a clerk in commercial lines for a few years and entered railway service in August, 1859, as cashier in the office of the assistant treasurer of the Burlington & Missouri at Burlington, Ia., where he made his permanent home. In 1862 Mr. Perkins was made assistant treasurer and secretary of the company, serving until 1865, when he became superintendent. In 1873 he was elected vice-president of the Burlington & Missouri Railroad in Nebraska, serving until January 1, 1880, when that company was consolidated with the Chicago Burlington & Quincy on March 2, 1876. Mr. Perkins was elected vice-president of the Chicago Burlington & Quincy and on September 29, 1881, became its president, which office he held continuously until February 20, 1901. On resigning the presidency Mr. Perkins did not sever his connection with the road, but remained a director of the company until his death.

Charles Elliott Perkins.

Mr. Perkins' policy as the chief executive of the Burlington was a happy combination of conservatism and aggressiveness. The standards of maintenance were high and the financial policy one calculated to preserve the company's credit; yet there was no hesitation in undertaking extensions even when the ultimate advantage might be distant in achievement. The building of the Billings extension of the Burlington from Alliance, Neb., to Huntley, Mont., completed in 1894, was a striking example of Mr. Perkins' aggressiveness. The Billings line was built in opposition to the views of many of his associates, who contended that it would always remain only a trail through the sage brush; yet this line was an important element in making the acquisition of the Burlington desirable for the northern transcontinental lines.

Mr. Perkins was naturally of a retiring disposition, never seeking publicity as to his business or private affairs. He was of unusually quick perception, grasping the salient points involved in a business proposition at once, forming his conclusions rapidly and then acting promptly. No better demonstration of the high standard of personal honor which guided his conduct can be given than the statement of his action in connection with the First National Bank of Lincoln, Neb. Being a personal friend of the president he had bought some stock in the bank. Without his consent or knowledge he was elected a director in the bank. He did not want to accept the position because the Burlington kept a large account there, but it was urged upon him that his name lent stability to the bank and he reluctantly consented to serve as a director. Not long after this the comptroller of the currency, after examination, called upon the stockholders of the bank for an assessment of 20 per cent, which was paid. Soon came another assessment, and, as some of the stockholders could not pay their assessments, Mr. Perkins paid these as well as his own. Soon the entire sum for which the stockholders were liable had been called for, Mr. Perkins paying the assessments of all the stockholders who could not pay their own and becoming the owner of all the stock.

The assets of the bank being found to be mostly bad and indifferent, he threw his fortune into the breach, sacrificing choice investment securities at the low prices then obtaining, and in a year and a half he had furnished the sum of $1,100,000 and owned a bank with a great array of cat-and-dog security, second mortgages, dubious judgments and doubtful lands subject to tax titles. He then applied himself to straighten out the tangle, putting in more money, paying the first mortgages and the prior judgments, and finally bringing order out of chaos.

In his executive capacity Mr. Perkins displayed a striking ability in choosing capable subordinates and an equal capacity for developing them. Having sketched out the work, his men were given a free hand to act. The Burlington was made a school for railway executives, from which many successful men were graduated. The esteem in which Mr. Perkins was held by his lieutenants is aptly expressed in the statement of E. P. Ripley, president of the Atchison Topeka & Santa Fe, who says: "Charles E. Perkins was a great man, and the greater because of his modesty. His name rarely appeared in print. He avoided publicity, and was rarely seen at meetings of railroad men. Yet no railroad officer did better or more accurate thinking or knew better the affairs of his road, and it was his brains that made the Burlington. I owe much to his influence, and learned from him more than I ever did from anyone else. He was a strong and original thinker, of great executive ability, and withal a most upright and honorable man."

Mr. Perkins left surviving him a widow, two sons and four daughters. On the occasion of the funeral, which was held at Westwood, Mass., on November 11, all work and traffic on the Burlington system were suspended for five minutes as a tribute of respect.

Water has been turned into the new channel of St. Mary's river at West Neebish, Mich., marking the completion of one of the greatest projects undertaken on the great lakes.

NOV 15-07

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Mr. Perkins was naturally of a retiring disposition, never seeking publicity as to his business or private affairs. He was of unusually quick perception, grasping the salient points involved in a business proposition at once, forming his conclusions rapidly and then acting promptly. No better demonstration of the high standard of personal honor which guided his conduct can be given than the statement of his action in connection with the First National Bank of Lincoln, Neb. Being a personal friend of the president he had bought some stock in the bank. Without his consent or knowledge he was elected a director in the bank. He did not want to accept the position because the Burlington kept a large account there, but it was urged upon him that his name lent stability to the bank and he reluctantly consented to serve as a director. Not long after this the comptroller of the currency, after examination, called upon the stockholders of the bank for an assessment of 20 per cent, which was paid. Soon came another assessment, and, as some of the stockholders could not pay their assessments, Mr. Perkins paid these as well as his own. Soon the entire sum for which the stockholders were liable had been called for, Mr. Perkins paying the assessments of all the stockholders who could not pay their own and becoming the owner of all the stock.

The assets of the bank being found to be mostly bad and indifferent, he threw his fortune into the breach, sacrificing choice investment securities at the low prices then obtaining, and in a year and a half he had furnished the sum of $1,100,000 and owned a bank with a great array of cat-and-dog security, second mortgages, dubious judgments and doubtful lands subject to tax titles. He then applied himself to straighten out the tangle, putting in more money, paying the first mortgages and the prior judgments, and finally bringing order out of chaos.

In his executive capacity Mr. Perkins displayed a striking ability in choosing capable subordinates and an equal capacity for developing them. Having sketched out the work, his men were given a free hand to act. The Burlington was made a school for railway executives, from which many successful men were graduated. The esteem in which Mr. Perkins was held by his lieutenants is aptly expressed in the statement of E. P. Ripley, president of the Atchison Topeka & Santa Fe, who says: "Charles E. Perkins was a great man, and the greater because of his modesty. His name rarely appeared in print. He avoided publicity, and was rarely seen at meetings of railroad men. Yet no railroad officer did better or more accurate thinking or knew better the affairs of his road, and it was his brains that made the Burlington. I owe much to his influence, and learned from him more than I ever did from anyone else. He was a strong and original thinker, of great executive ability, and withal a most upright and honorable man."

Mr. Perkins left surviving him a widow, two sons and four daughters. On the occasion of the funeral, which was held at Westwood, Mass., on November 11, all work and traffic on the Burlington system were suspended for five minutes as a tribute of respect.

Water has been turned into the new channel of St. Mary's river at West Neebish, Mich., marking the completion of one of the greatest projects undertaken on the great lakes.

RAILROAD GAZETTE NOV 22 07

Pullman Company.

Gross earnings for the year ended July 31, 1907, were $32,186,013, an increase of $2,597,371. Operating expenses were $17,388,741, an increase of $2,044,000. Dividends amounted to $7,476,878, an increase of $1,556,894. These dividends do not include the distribution of accumulated surplus made in November, 1906. The surplus for the year was $4,149,455, a decrease of $820,619. The mileage of road over which the company operated cars was 195,250, an increase of 4,817. The number of passengers carried increased 11 per cent. and the number of miles run increased 7 per cent. The company built $37,019,627 worth of cars, an increase of $9,300,635. At the annual meeting, George F. Baker, New York, was elected a Director, succeeding Charles S. Sweet, Chicago.

RAILWAY AGE NOV 22 07

Mr. F. R. Neat has been appointed district superintendent of the Pullman Company at St. Paul, Minn., in place of Mr. C. C. Barclay, resigned.

RAILWAY REVIEW NOV 23.07

—The annual statement of the Pullman Company for the fiscal year ending July 31, 1907, gives figures as follows:

Total revenue	$32,186,012.82
Expenses of operation	17,388,741.12
Total dividends and charges	28,036,557.63
Net surplus	4,149,455.19
Surplus	5,256,219.76
Net assets	105,256,219.76

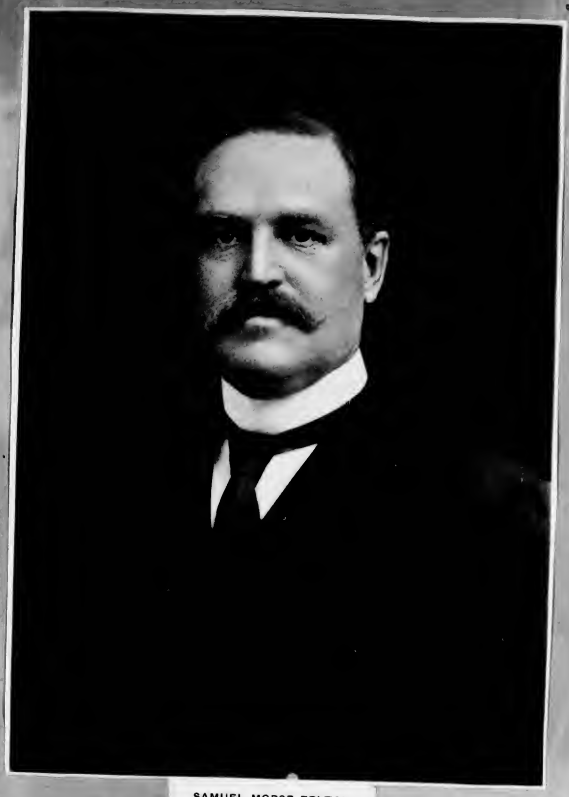
President Robert T. Lincoln supplemented the annual report with the following general information: The number of passengers carried during the year was 18,020,379, and the number of miles run was 501,439,900. During the previous year the number of passengers carried was 16,253,947, and the number of miles run was 467,629,664. This year, therefore, shows an increase of over 10 per cent in the number of passengers carried, and over 7 per cent in the number of miles run. The total mileage covered by contracts for operation was 195,250. The value of the manufactured product of the car works for the year was $37,019,627.20, and of rentals $216,789.59, a total of $37,236,416.79, against $28,103,148.90 for the previous year.

RAILROAD GAZETTE NOV 29.07

The Tonopah & Goldfield denies having ordered four chair cars, one smoking car and one baggage car from the Pullman Company, as reported in the *Railroad Gazette* of November 8.

The Boston & Maine is said to have ordered 25 passenger cars from either the Pullman Company or the Laconia Car Company.

RAILWAY AGE NOV 29. 07



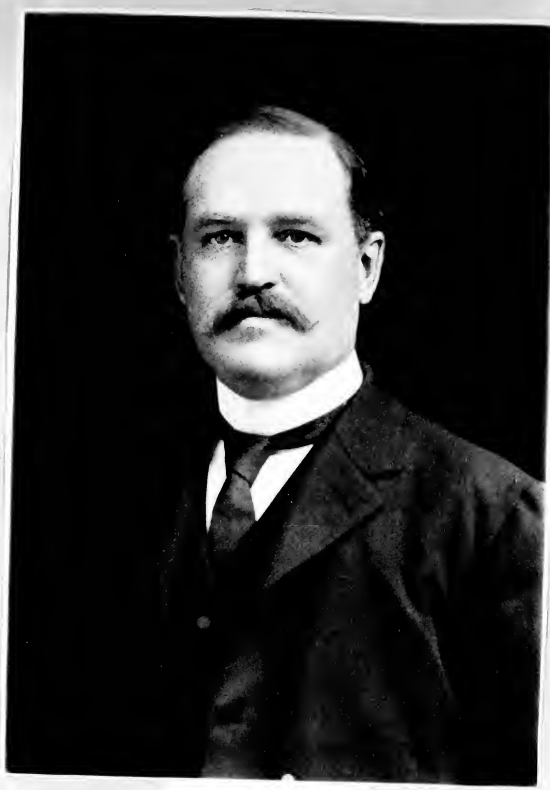
SAMUEL MORSE FELTON,
President Mexican Central Railway.

SAMUEL MORSE FELTON.

Samuel Morse Felton was on November 26 elected president of the Mexican Central, effective immediately, and Mr. Felton at once resigned the presidency of the Chicago & Alton, which he has held since September 7, 1899. He succeeds Eben Richards, who is general counsel of the Mexican Central, and has served as president since the retirement of A. A. Robinson in November, 1906. Mr. Felton will make his headquarters in Mexico City, and it may be assumed that his election marks the beginning of a thorough rehabilitation of the property.

A year ago announcement was made of the plans for the consolidation of the Mexican Central and the National Railroad of Mexico, through stock control by a new company, the National Railways of Mexico, in which the Mexican government will hold a majority of the capital stock and also guarantee the bond issues of the company. The stock issues were to aggregate $460,000,000, par value, Mexican currency, divided into $50,000,000 first preferred, $250,000,000 second preferred and $150,000,000 common. The plan provided for two issues of bonds guaranteed as to principal and interest by the Mexican government, preferred mortgage 4½ per cent bonds not to exceed $462,000,000 and general mortgage 4 per cent bonds not to exceed $372,000,000 in amount. In July last it was determined to postpone the financing of the new company until the market conditions should be more favorable. It is understood that the original option for the purchase of control of the Mexican Central stock recently expired, but has been extended for four months.

Mr. Felton was born on February 3, 1853, at Philadelphia, Pa. He entered railway service in August, 1868, as rodman for the Chester Creek Railroad. From 1870 to 1874 he was successively leveler and assistant engineer on the Lancaster Railroad, engineer in charge of surveys on the Chester & Paoli Railroad and chief engineer of the Chester & Delaware River Railroad. In August, 1874, he was appointed general superintendent of the Pittsburg Cincinnati & St. Louis and in September, 1881, his jurisdiction was extended over the Little Miami and the Cincinnati & Muskingum Valley roads. From January, 1882, to February, 1884, he was general manager of the New York & New England, and on the latter date was made assistant to the president of the New York Lake Erie & Western in special charge of the New York Pennsylvania & Ohio, subsequently being promoted to be general manager of the latter road. In January, 1885, he was elected vice-president of the New York Lake Erie & Western in charge of the traffic department, and in October of the same year was chosen first vice-president in charge of the traffic and operating departments, resigning in November, 1890. From the latter date until March, 1892, he was president of the East Tennessee Virginia & Georgia, and from 1890 to 1895 was president of the Alabama Great Southern also. On November 21, 1890, he was elected president of the Cincinnati New Orleans & Texas Pacific. In March, 1893, when that road passed into a receivership, he was appointed receiver, severing his connection with the Cincinnati New Orleans & Texas Pacific in October, 1899, when the receivership was dissolved.



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RAILWAY AGE
NOV 29 07

Pension System for the Erie.—Officials of the Erie Railroad have prepared a plan for a pension association, which is now being presented to the employes. Before final decision will be made on governing rules the company will make a request of its employes to study the proposed plan and suggest amendments and additions that they think advisable. Committees representing associations of employes are to meet early in 1908 to discuss the matter, but no definite date has been set. The proposed association will be strictly an old age pension system and will not provide for disability.

RAILWAY REVIEW DEC 7. 07

—The Pullman Company's paint shop at Buffalo, N. Y., was burned Dec. 2. Twenty-one Pullman cars were burned. The total loss is about $400,000. The shop was a brick building, 400 feet long and had a capacity for 27 cars.

RAILWAY AGE
DEC 13. 07

Boston & Maine has placed an order for 40 passenger coaches, 20 with the Pullman Company and 20 with the Laconia Car Company. Later reports state that this order has been held up until January.

Pullman Company, at a meeting of the board of directors held in Chicago on December 7, elected the following officers of the financial department: K. Demmler, treasurer, and R. C. Kelly, assistant treasurer. Mr. Kemmler succeeds George F. Brown, who has been placed on the retired list after 36 years of continuous service.

Charles S. Sweet has been appointed assistant to the president of the Pullman Company.

RAILWAY REVIEW
DEC 21 07

Pullman Regulation Act Void in Wisconsin.

The Wisconsin supreme court on Dec. 13, declared unconstitutional the recent legislative act providing that, "Whenever any person pays for the use of a double lower berth in a sleeping car he shall have the right to direct whether the upper berth shall be open or closed, unless the upper berth is actually occupied by some other person; and the proprietor of the car and the person in charge of it shall comply with such direction."

—The Pullman Co. will at once rebuild the 24-stall painting and finishing shop at its plant at Buffalo, N. Y., which was completely destroyed by fire on Dec. 2. H. E. Benson, manager Pullman shops, Buffalo, will have charge of the work of rebuilding.

RAILWAY AGE
DEC 20. 07

SOME IMPRESSIONS OF FRENCH AND ITALIAN RAILWAYS.

An American railway man abroad recently wrote to a friend at home recounting his experience on a journey over French and Italian railways, in part as follows:

"I went from Paris to Nice on one of the trains de luxe so much advertised on account of the wagon-lits, and could not help thinking of the difference between the comforts afforded by this service, or I might say the lack of comforts, and the conveniences to be enjoyed on almost any train in the United States, and also the difference in the cost of travel in Europe and at home. The most modern sleeping cars are no better than those of the older style you know very well. Four-wheel trucks, poor springs, light and flimsy construction, poor lighting, defective ventilation and narrow, uncomfortable beds are as characteristic of the sleeping car service today as on earlier visits to Europe.

"And for this service I paid almost double what it would have cost in the United States, or, rather, what a better service would have cost there. From Paris to Nice is about 670 miles. I paid for my railroad ticket 120 francs and for a single berth in the sleeping car 81.50 francs. If I had desired to occupy the little room by myself I would have been compelled to buy additional tickets—railroad and sleeping car—as you must buy a full ticket for every berth you desire to claim. The fare paid the railroad was about equal to 3½ cents a mile, and the fare for the wagon-lit was equivalent to $16 for a single berth for one night. And these charges allow but 50 pounds of free baggage, with a very high tariff for excess. For dinner, the regular dinner without wine, coffee or water, one pays $1.40 (7 francs).

"The railroads of the United States have some sins to answer for, but I forget them all when I travel on a foreign railroad."

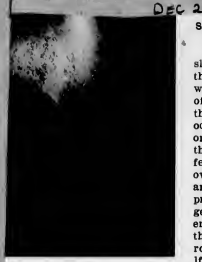
RAILROAD GAZETTE
DEC 20.07

Pullman Company.—George F. Brown, Treasurer, has been retired on pension after 36 years of service. K. Demmler, Assistant Secretary and Assistant Treasurer, succeeds Mr. Brown. C. S. Sweet, Secretary to the President, has been made Assistant to the President. R. C. Kelly has been appointed Assistant Treasurer. Mr. Brown began work with the company in 1871 as Assistant to the General Superintendent, following four years in railroad service as Secretary and Treasurer to the Receiver of the Memphis, Clarksville & Louisville, now part of the Louisville & Nashville, and then as agent in the freight department of the Illinois Central. He was successively Acting General Superintendent, General Superintendent and General Manager of the Pullman Company, and of late years he has been Treasurer. He is 64 years old.

The Tehuantepec National is said to have ordered three baggage cars, two first class passenger cars and five third class passenger cars from the Pullman Company. Up to the time of going to press we have not been able to confirm this item.

DEC 27. 07

Sleeping Car Berths in Wisconsin.



The Supreme Court of Wisconsin has declared unconstitutional the act of the 1907 Legislature which assumed to give the occupant of a lower berth in a sleeping car the right to say whether the unoccupied upper berth shall be open or closed. The court declares that the act is an unwarranted interference with the right of dominion over property by the owner thereof, and an unlawful appropriation of property, not in the interests of the general public but for the convenience of a few. It is suggested that the Legislature could compel a railroad to give a passenger this right if he paid reasonably for it.

The main opinion was written by Justice R. D. Marshall, and Justice William H. Timlin filed a supplementary opinion, concurring in the result, but setting forth that he believes that the Legislature has a right to regulate the operation of sleeping cars.

The syllabus says: Police regulations which are reasonable are not inhibited by the constitution though invading its letter, since the exercise of the police power is so essential to the public welfare that it is presumed that such exercise within reasonable limits was not intended to be prohibited, but, on the contrary, guaranteed by the general declared purposes of civil government and the manifest purpose of the constitution.

It is a judicial function to determine the proper subjects for police regulations and a legislative function to determine, primarily, the expediency of regulation and the character thereof subject to judicial supervision to the extent of determining, in cases as they arise, whether the boundaries of reason have been so clearly exceeded as to violate some constitutional prohibition, express or implied; the judgment of the Legislature being controlling unless it appears beyond reasonable controversy that the interference is unreasonable.

The doctrine that the police power is a law of necessity may well be said to furnish the key to what is within and what is without the boundaries of such power; not that a police regulation to be legitimate must be an absolute essential to the public welfare, but that the exigency to be met must so concern such welfare as to suggest reasonable necessity for a legislative remedy, the legislature to be the primary judge and the supreme judge as well except as to interference so unreasonable as to be excessive beyond reasonable controversy.

* * * Is the restraint or requirement in proportion to the danger? Is it possible to secure the object sought without impairing essential rights and principles? * * * A legislative declaration respecting the character of a law, as that its purposes is to promote public health, is not absolutely binding on the courts. It is their function to determine the real intent of the law and if its ostensible is not the real purpose, to give effect to the constitution by condemning the enactment.

A law providing that the upper berth in a sleeping car, when unoccupied, at the option of the occupant of the lower berth, be closed, is not for the promotion of the public health and comfort in that the option is given in each instance where the regulation is applicable to say whether it shall operate or not, manifestly suggesting that it is for private rather than for public interests.

The penalty for violating the law was imprisonment for six months or a fine of $100, or both. The Pullman Company instructed its porters to disobey the law. Stone, a passenger, filed a formal complaint with the District-Attorney of Brown county, at Green Bay, against a porter on the Northwestern road; the porter was arrested and convicted. The Pullman Company appealed to the Supreme Court, having backed the porter at all steps in the court procedure.

RAILWAY REVIEW
CHICAGO, JAN. 4, 1908

Now that January interest and dividends have generally been taken care of, there ought to be a great "loosening up" in the way of paying floating indebtedness. Nothing would have a greater influence for good at this time than an honest effort to pay debts. The policy of "staving off" everything possible must have an end. However necessary it may have been in certain cases, it has not been an absolute necessity in others; and has resulted in a great deal of hardship. A certain purchasing agent of a large railway recently wrote to a manufacturer asking for a discount for cash payment on a bill already past due. He claimed equity in this demand because, as he said, he knew that other railways were very much behind in their payments, some of them many months, and not to allow him a discount for cash resulted in a practical discrimination against his company. This is a novel claim, and it was not allowed. It illustrates a view which is not made just by its prevalence, viz., that manufacturers and supply dealers may justly be held up because the patronage of the debtor has been very valuable to them. The reflex influence of a policy of "staving off" will sooner or later be felt by the party doing it. Much of the delay is not absolutely necessary, and every case of such unnecessary dilatoriness operates in a circle, tending to cripple a good many interests. On the other hand, prompt payments at such a time as this will unquestionably be appreciated and gratefully remembered in the future.

—The Tehuantepec National is reported to have placed an order with the Pullman Company for two first-class passenger coaches, five third-class passenger coaches and three baggage and mail cars.

RAILWAY AGE
CHICAGO, DEC. 27, 1907

One of the most difficult problems connected with steel passenger cars is the design for a sleeping car. This has been worked out in a very satisfactory manner by Max Schneider, chief engineer of the Pullman Company. The first steel sleeping car built from his designs has so fully overcome all the difficulties connected with the construction of such cars out of metal that the way is now clear for the prompt construction of steel sleeping cars whenever the railroads find it necessary to order them.

Another ray of sunlight is the attitude of the interstate commerce commission. A year ago business men and officials of railways felt much concern as to the use, with its changed personnel, that it would make of the increased powers given it by the Hepburn act. The references made to the commission in the letters in the symposium that we print elsewhere show that fears on this head are being dissipated. The commission during the present year has received much severe criticism from both shippers and officials of railways, but the ability and high character of its members, both old and new, their desire, while construing and enforcing the law strictly, to pursue a fair and conservative policy, their disposition painstakingly and candidly to investigate upon their merits the questions presented to them are now generally conceded. The commission has made mistakes, but in view of the number, novelty, variety and complexity of the problems it has dealt with this was to be expected. Some of the state commissions have done work that compares favorably with that of the federal body; the others could follow its example with much benefit to the people of their states and of the country.

RAILWAY AGE
CHICAGO, JAN. 3, 1908

Seaboard Air Line Railway.—S. Davies Warfield and R. Lancaster Williams wer appointed receivers for this road on January 2 by P. C. Pritchard, judge of the United States circuit court for the eastern district of Virginia. Mr. Warfield is one of the voting trustees and is president of the Continental Trust Company of Baltimore; he represents the Blair and Ryan interests which have been in control of the property. Mr. Williams is a brother of John Skelton Williams, who is a voting trustee and formerly controlled the road. The appointment of receivers was made on application of the company and not of either faction in the property. Blair & Co. and Ladenburg, Thalman & Co. of New York have offered to purchase at par the coupons maturing on January 1 on various bonds of the Seaboard Air Line system and also the equipment bonds maturing on the same date. The advertisement published by these firms states that the offer is made "in order that the integrity of the Seaboard Air Line Railway system may be maintained, pending an opportunity for the formulation of proper plans for the readjustment of its affairs." The offer applies to all coupons due and maturing equipment bonds which may be presented on or before February 29 to the Morton Trust Company or the Continental Trust Company of New York.

December 28, 1907. THE

THE RAILWAY AND ENGINEERING REVIEW

ESTABLISHED JUNE 1868

No. 52. SATURDAY, DEC. 28, 1907. Vol. XLVII.

Progress of Pullman Case.

The Pullman Car Co. hearing before a special examiner in St. Paul, Minn., was adjourned Dec. 20, and probably will be resumed in Chicago, where it can be held before the Interstate Commerce Commission and where the general officers of the Pullman company can be brought into court. The annual statements then can be presented. At the hearing it developed that the Northern Pacific owns a half interest in 50 Pullman cars, practically all the first class sleepers regularly operated over its system. The Pullman company manages the cars and handles all the revenues, but all receipts in excess of $6000 per car per annum are turned over to the railroad company.

SATURDAY, DECEMBER 28, 1907.

The financial situation should experience decided relief, by the distribution of 190 million dollars in interest and dividend payments at this time. The slowness of collections from railway companies and other large corporations has seriously embarassed many of their creditors. Undoubtedly the withholding of money for interest and dividends has had much to do with this. Payments for supplies can generally be withheld without difficulty, because the creditor wishes to retain the good will of the buyer. It is not just, however, for the debtor to take advantage of this fact; and the current complaints against certain railways and other business interests, in this matter are well founded. Nothing would help business more at the present time than an honest effort on the part of everybody to meet floating indebtedness.

Pensions on the Grand Trunk Ry.

The Grand Trunk Ry. is about to announce a new pension system, which will become operative Jan. 1, 1908, and will affect 35,000 employees throughout the system, according to reports. This fund will be maintained by the company and each employee will be eligible. The sum of $200,000 has been voted by the shareholders and about $75,000 will be contributed annually for maintenance. Each officer and employee must retire at the age of 65 years. Those who have served 15 years or more will be entitled to an annuity, with the approval of the pension committee. The Superannuation and Provident Fund Association established some years ago will continue.

RAILWAY AGE
CHICAGO, JAN. 10, 1908

DECISION IN EMPLOYERS' LIABILITY ACT CASES.

The decision of the supreme court of the United States in the employers' liability act cases is of far-reaching importance—not so much for the immediate results that it produces as for what it implies. The employers' liability act, which was passed by congress in 1906, is held unconstitutional, but the views expressed by the various members of the court indicate that a law can be passed that will be upheld. The act was overturned because it imposed a liability upon carriers "in favor of their employes without qualification or restriction as to the business in which the carriers or their employes may be engaged at the time of the injury," and therefore was a regulation of intrastate as well as of interstate commerce. Three members of the court, Chief Justice Fuller and Justices Brewer and Peckham, who concurred with Justice White in the majority opinion, dissented from the view expressed by him that congress may regulate the relations between master and servant when engaged in interstate commerce. Justice Day concurred with Justice White throughout. Justices Harlan and McKenna contended that the act was constitutional as applied to employes engaged in interstate commerce. Justice Holmes wrote an opinion favorable to the constitutionality of the law and Justice Moody contended that it was constitutional throughout. Thus six out of the nine members of the court, White, Day, Harlan, McKenna, Holmes and Moody, expressed the view that congress has the constitutional power to regulate the liability of the carrier to the employe for accidents taking place in interstate commerce.

The decision has a direct bearing upon the safety appliances act and the act regulating the hours of labor of employes of railways which goes into effect on March 4 next. The safety appliance legislation has been in effect 10 years. It has accomplished the purpose for which it was passed, without its validity ever being tested in the supreme court. A case brought by the government against the Ann Arbor Railroad in which the constitutionality of the act is denied is now pending. It seems clear, in view of the precedent established in the employers' liability decision, that, if the court finds that the safety appliances act applies to intrastate as well as to interstate commerce, it will invalidate it. The hours of labor law, like the employers' liability act, fails to distinguish clearly between employes engaged in interstate commerce and those engaged in intrastate commerce, and it is difficult to see how the one can stand now that the other has fallen.

The decision does not seem to have any marked tendency either to narrow or to broaden the authority of congress over commerce in the stricter sense of the term, that is (W. U. Tel. Co. v. Pendleton, 122 U. S., 347), over "the interchange and transportation of commodities or visible and tangible things, the carriage of persons and the transmission of ideas, orders and intelligence." Some prominent railway lawyers hoped that the employers' liability act would be upheld, not because they liked the act, but because they thought that a decision in its favor would be a step toward ousting the states from all authority over the instrumentalities used in interstate commerce, and therefore toward depriving them entirely of power to interfere with that commerce. The court, however, sticks to the conservative view that the authority of the states over intrastate commerce and all that pertains to it is exclusive. Whether it will think that consistently with its decision in the employers' liability case it can hold unconstitutional state laws that necessarily and directly interfere with interstate rates and transportation, as many laws passed by the states within the past 12 months seem clearly to do, remains to be seen. The court has dashed the hopes of President Roosevelt and others who have advocated extension of federal power through altered construction and interpretation of the constitution. It has shown that it will still protect the rights of the states when it believes that an attempt to encroach upon them is being made by the federal government. Probably it may be relied upon to protect the domains of congress and of the interstate commerce commission from encroachment when it shall be demonstrated, as we believe it will be, that they have been invaded by state legislatures and railroad commissions.

RAILROAD GAZETTE
N.Y. FRI., JAN. 10, 1908

By a divided bench, the United States Supreme Court has overthrown the Employers' Liability Act of June 11, 1906. Four justices—Harlan, McKenna, Holmes and Moody—held that the law was valid in whole or in part; a fifth—Justice White—believes that it can be so redrawn as to be valid. Chief Justice Fuller and Justices Peckham and Brewer believe that Congress has attempted regulation repugnant to the Constitution. Thus the application of the law is stopped, the majority opinion being that it was so drawn that the unconstitutional parts were inseparable from the constitutional; but application of the underlying principle is, apparently, only postponed. Two interesting comments suggest themselves—first, that many of the extremely important, radical corporation cases now pending before that august body are pretty likely to terminate in the same way; second, that there are two distinct parties in the court, one of which is willing to see Congress do a great deal more regulating than the other is, and that between these parties the balance of power is quite uncertain, depending on the vote of several justices to whom each case is a new case.

RAILWAY REVIEW JAN 11. 1908

The Constitutionality of the Employers' Liability Act.

The endeavor of President Roosevelt to make employers of labor responsible for all injuries to employees has met with a temporary check and a permanent limitation. The employer's liability act passed by congress and approved June 11, 1906, has been declared unconstitutional by the supreme court of the United States. The decision, however, is based upon the fact that the law applies to all common carriers engaged in interstate commerce, whether the employee injured is engaged in interstate railway operation at the time of the accident or not. The act was intended, so far as it was in the power of the federal government, to change the common law which exempted employers from liability for injuries due to the negligence of coemployees, or to the contributory negligence of the person injured. It did not abolish entirely contributory negligence as a defense, but provided that it should not be a bar to recovery if the "contributory negligence was slight and that of the employer was gross in comparison"; but left the comparison to the jury and permitted it to determine the damages in proportion to the negligence of the injured person. This latter provision was probably intended to deter employees from seeking injury in order to recover damages—a class of cases not as uncommon as might be supposed.

The decision was made in two cases which had been appealed from United States circuit courts in Tennessee and Kentucky, in which, as our readers are advised, the judges had declared the law unconstitutional. In three other cases the law had been sustained by the lower courts. The decision of the supreme court was a close one, the judges standing five to four. It was rendered by Justice White. He declares that the law clearly extends to all of the business of the interstate carriers, and is not limited to interstate business. It therefore exceeds the powers of congress, and is unconstitutional as to all its provisions. If, he says practically, congress can regulate all of the business of anyone a portion of whose business is interstate, the power of congress would extend to every conceivable subject. It is evident that he holds that if the statute were limited to injuries received while engaged in interstate business, he would hold it to be constitutional.

The views of the justices are of the greatest importance in this matter. Only one, Justice Day, was with Justice White in all points. Justice Moody, President Roosevelt's appointee, from his cabinet, reflects the president's views, and believes the act constitutional. Justices Harlan and McKenna hold the law to be constitutional as far as it applies to employees engaged in interstate business, but null and void as to others. Justice Holmes also dissented from the opinion. But three, Chief Justice Fuller and Justices Brewer and Peckham while concurring in the result of the opinion dissent from the argument. They hold that employers' liability is not commerce, and hence not subject to the regulative powers of congress. They evidently oppose the present tendency to extend federal power by unconscionable stretching of that phrase "to regulate commerce." The act of employment is a contract made in some state and under the laws of that state. Cont'd next col.

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It appears, therefore, that if a law is passed which limits the liability to cases where the injured party is at the time engaged in interstate operation, the supreme court will sustain it by a vote of six to three unless some justice gets new light on the subject meantime. Senator Knox has promptly prepared such a bill, and it will probably become a law. Then the question will arise in each case as to whether the employee is injured while engaged in interstate business. For instance, if he is working in the shops on repairs to an engine which sometimes runs over the state line, is that interstate business? He is running a switching engine which never goes out of its yard, but may be switching a freight car which does at times go out of the state. Is the destination of the load to govern? And how about empties? Or perhaps the initials on the side of the car will decide the matter? A thousand such questions will arise for the juries to decide, and it will be an unusual jury which will not find some reason to class the occupation as interstate.

This is, perhaps, the proper time to call attention to a very remarkable utterance of the president at the Jamestown Exposition, in connection with this subject. It cannot properly be regarded but as argument that is utterly bad, uncalled for by the end he was seeking to obtain, and forming a precedent which will many times arise to bother him. He said:

"No law is more emphatically needed, and it must be kept on the statute books in drastic and thoroughgoing form. The railroads are prompt to demand the interference and to claim the protection of the federal courts in times of riot and disorder, and in turn the federal government should see to it that they are not permitted successfully to plead that they are under the federal law when their own rights can be protected, but outside of it when it is invoked against them in behalf of the rights of others. If it is proper for the federal courts to issue injunctions in behalf of railroads it is proper that railroads should be held to a strict liability for accidents occurring to their employees. There should be the plainest and most unequivocable additional statement, by enactment of congress, to the effect that railroad employees are entitled to receive damages for any accident that comes to them as an incident of the performance of their duties, and the law should be such that it will be impossible for the railroads successfully to fight it without thereby forfeiting all right to the protection of the federal government under any circumstances. In the same way there should be rigid federal legislation to minimize all railway accidents."

This implies that in asking for protection against mob violence the railways are begging for a favor, instead of demanding a right. It implies that they are seeking the injury and death of their employees. It classifies the railways with mobocracy and anarchists. What relation is there between their application for protection against violence, and their liability for injuries to one employee which is due to the negligence of another? Is it properly within the option of the civil administration whether it shall suppress riot and disorder? Is not such anarchy suppressed for the benefit of the public as much or more than for that of the railway? And is not railway property entitled to just as much protection as any other? The railways have not violated any law in this matter of employer's liability—they have asked only that judgment be in accordance with the law. The whole argument resembles a threat to withdraw government protection against mob violence if the constitutionality of a law of congress is not acknowledged without the legal test of the courts.

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Railway Review
Sat., Jan. 18, 1908

On the special night trains of the N. Y., N. H. & H. R. R., between New York and Boston, the usual type of sleeping cars have been superseded by 10-stateroom sleepers.

The C., M. & St. P. Ry. has instituted asbestos sheets under the mattresses of sleeping cars, to avoid the disagreeable temperatures arising from the radiators underneath.

Pullman Controversy.

The Interstate Commerce Commission will be asked to make a complete investigation into the sleeping car business of the Pullman Co. George S. Loftus, who filed a complaint against the company last summer directed specifically against charges for berths to and from St. Paul, Minn., will ask the commission to permit him to amend his petition so as to include the entire operation of the company. This action was taken because the company, during the recent hearing in St. Paul before the commission, alleged in fixing charges, that the business done throughout the country was taken into consideration.

Railway Age
Chicago, Jan. 24, 1908

Texas Commission Has No Jurisdiction over Sleeping Car Rates.—Judge Edward R. Meek, sitting in federal court at Dallas, Tex., delivered an opinion on January 13, holding that the Texas railroad commission has no jurisdiction under the railroad commission law of Texas over sleeping car rates, and that the order it had issued for a reduction in sleeping car rates was unconstitutional, because it operated to impair the obligation of contracts existing between the Pullman Company and the various railroads.

Feb 7, 08

THE ATTACK ON THE PULLMAN COMPANY.

The Bellman of Minneapolis, Minn., publishes an article concerning the proceeding against the Pullman Company before the interstate commerce commission, from which the following extracts are made:

The recent attack upon the Pullman Company is another example of the ease with which a corporation can be haled before the interstate commerce commission and put to large expense and trouble in order to defend itself against a senseless and unreasonable complaint that is manifestly mischevious and purely fictitious in basis so far as the general public is concerned, at least that portion of it which is accustomed to travel in sleeping cars. The defendant has no friends, that is newspaper friends, consequently it can be safely denounced as one of the most unpopular and grasping corporations in existence.

The criticism of the Pullman car made by those who have use for it and who, having paid for their accommodation, have a right to comment on its character, is seldom or never directed toward the price charged for berths. The lack of privacy, the inconvenience of the upper berth, the poor ventilation, the cramped toilet rooms and other minor details are often criticized, but the price is generally regarded as fair and reasonable.

The man who goes to bed in a sleeping car with his boots on and who is in his natural element in a second-class day coach, who does not appreciate clean linen or the convenience of water, soap and towels; who is, in fact, the sort of a person the discriminating traveler is anxious to avoid mingling with on a journey and consequently willing to pay a premium to avoid, is the one who is continually roaring about the cost of his berth and howling with indignation because the obliging porter expects a modest tip. Such people seldom use a Pullman car if they can avoid it; they prefer, if it be possible, to get even with the soulless and unpopular corporation by slipping quietly into its wash room in the early morning and using its facilities without cost.

Those who travel very much realize the value of the sleeping car service and are willing to pay the price asked. Moreover, they do not object to tipping the porter for personal service for they well know that the slight additional expense is money always wisely invested, since it secures attention which the company itself is not bound to furnish. On the whole, therefore, there is no general complaint against the Pullman Company by those who are paying it the revenue it receives. On the contrary, the traveling public is reasonably satisfied and its only demand is for lower berths.

This distinguished example of American enterprise and energy one might imagine would be a subject for congratulation, even praise, but the crime of the Pullman Company is its success in accomplishing, thoroughly and efficiently, that which it undertook to do. It is guilty, grossly, unpardonably guilty, of having been prosperous.

It has come to a pass where the American corporation is damned if it does and damned if it don't. The everlasting probers, muck-rakers, trust-busters and corporation-hounders are content with neither success nor failure. If a corporation does not make dividends it is guilty of gross mismanagement and its officers should be put in jail. If it makes too much money it is again guilty of extortion and the law should be invoked to reduce its earning capacity. In either event, down with the corporation. It is the exhibition of this temper that discourages enterprise and makes business a difficult and dangerous occupation in these days.

Should the complaint against the Pullman Company result in reducing the cost of sleeping car accommodations, there will inevitably follow a corresponding reduction in the extent and quality of the service rendered. This may be surely counted upon. The traveling public does not desire such a reactionary movement and those who are publicly moving for reduced rates do not actually represent any considerable por-

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Railway Age,
February 7th, 1908.

Railways and the Agitation against them

The people are paying a little attention to the "Octopus Twins," viz., the Western Union Telegraph Company and the Pullman Company. As to the Western Union, the people are paying interest and dividends on something like 100 per cent water. In 1881 Gould got control and consolidated every wire in the country and injected $40,000,000 water at one crack.

As to the Pullman Company, like John Brown's soul, it has been marching on steadily from the time the Alton sawed off all its platforms and ran the "Pullman" around all its tanks and coal chutes between Chicago and St. Louis. It has finally "gobbled it all," and paid enormous returns by overcharging the public and underpaying its overworked employes.

A little cloud has started up in Minnesota and the hearing adjourned to Chicago. They deny jurisdiction and deny they are common carriers. Possibly that is true, but before it is over laws will be passed putting them there.

The railroad companies have themselves writhed under the tipping nuisance on Pullmans and appreciated it was all wrong and made a few feeble attempts to stop it, without success, and every "crimp" that is put in the Pullman Company will inspire the same sentiment in the railroad managers throughout the country that was expressed by "Pat" when asked how the people of Ireland would take it if the lord lieutenant should be assassinated. He said: "Well, there would be many a dry eye in Ireland."

The people believe that the present stringency (whether right or wrong) that has reduced, almost in the twinkling of an eye, railroad receipts from 30 to 50 per cent, has been brought about purposely by the moneyed interests of Wall and Broad streets to accomplish their own ends, and what relief can we expect from the courts? The most that I have seen has been a conflict of jurisdiction between those of the states and nation and in every case the railroads have got the worst of it.

We are reaping a harvest that our predecessors have sown, and the only relief from unjust drastic legislation will be by ourselves building up an intelligent and fair public sentiment. I doubt whether we can do that when the only glimpse the people get of the "throne" is a twinkle of the "tail lights" of the president's special.

E. T. ABBOTT,
General Manager Klamath Lake Railroad.

Thrall, Cal., February 2, 1908.

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RAILROAD GAZETTE
N.Y., FRIDAY, MARCH 20, 1908

The Chicago, Milwaukee & St. Paul, as reported in the *Railroad Gazette* of March 6, has ordered 12 passenger cars from Barney & Smith and three passenger cars from the Pullman Co.

The Atlantic Coast Line, as reported in the *Railroad Gazette* of March 6, has ordered for the Washington & Vandemere 100 ventilated box cars of 60,000 lbs. capacity from the South Baltimore Steel Car & Foundry Co.

RAILWAY AGE
CHICAGO, FRI., MAR. 6, 1908

New York Ontario & Western, which was reported in The Railway Age of February 28 to be in the market for nine vestibuled passenger coaches and one vestibuled chair car, has placed the order for this equipment with the Pullman Company.

RAILWAY AGE
CHICAGO, FRI. APR. 3, 1908

Keewenaw Central has placed an order with the Pullman Company for one first-class passenger coach and one combination smoking, baggage and express car, as reported in The Railway Age for February 28. The specifications include the following details:

Passenger Coach.

Capacity	64 passengers	Height between sill and plate	6 ft. 8½ in.
Length over sills	54 ft.	Body	Wood
Width over sills	9 ft. 8 in.	Underframe	Wood
Over all at eaves	10 ft. ½ in.		

Smoking, Baggage and Express Car.

Capacity	42 passengers	Height between sill and plate	6 ft. 8½ in.
Length over sills	54 ft.	Body	Wood
Width over sill	9 ft. 8 in.	Underframe	Wood
Over a'	s.10 ft. ¼ in.		

Special Equipment.

Brakebeams	National Hollow	Heating system	Safety
Brakeshoes	Christie	Platforms	
Brakes	Westinghouse		Standard Coupler Co.
Curtain fixtures	Forsyth	Seats	Hale & Kilburn
Curtain material	Pantasote	Varnish	Murphy

THE "poor" Pullman Company steps out into the public stage limelight again today, having officially decided to utilize the passing pinching times as a pretext for temporarily closing its shops and indefinitely throwing between 5,000 and 6,000 workmen out of employment in the dead of winter. The far-fetched excuse is that the hard-hit railroads are unable to order or pay cash for their wonted rolling stock, however necessary, and the "poor" Pullman Company is suspicious of their proffered securities, for the time being, way down, in lieu of the said cash shortage. The peurile pretense might pass if the knowledge of the gluttonous dividends of the Pullman cyclops was not general, and also the reputation of the gourmand for accustomed indulgence in little white whoppers when it suits a purpose to supposedly bat the public eye. It is common and exasperating knowledge that the Pullman Company annual profits oversum three and four dozen millions, enabling the Juggarnaught to continuously stultify both the national and states' legislative marts, and roll defiantly on in its infamous looting of the traveling public. Instead of hoggishly closing down today for an indefinite period and brutally throwing its dependents out of work and family succor in the dead of winter, why did not the rich ripe Pullman Company call in its multiplied old sleeping-car tubs that polka-dot the whole United States and rebuild them to date? Chicagoans who travel much frequently encounter these relics, that belong to the Pullman junkyards, still in commission on cheap or curish roads that permit of the perpetration, and especially do they materialize like June bugs on convention and excursion occasions—at precisely the same excessive rates that the "poor" Pullman Company exacts for its twentieth-century palace cars. On a late trip in Texas the persuer discovered himself in one of the prehistoric Pullman arks with head-bumping lowered upper-berths, sere and yellow-cracked marble wash-bowls, and Methuselan watertank pumps! By way of addition to the rapture provoked by the discovered antiquity, the ark tank had sprung a leak and the poor pump was wholly responseless to the car full of patrons—or rather victims, yet the Shylock stipend was $2.50 for the half-night ride and the broom-gunned porter as usual blocked the snaky exit for his customary tip! In lieu of the multiplicity of these Pullman junk-yard arks and the alleged recurring necessity of perpetrating them upon the helpless people—however, always at the modern rates—why close the various shops today? Please, in humanity's name, "poor" President Robert T. Lincoln of the "poor" Pullman Company—please recall the closing edict, recall the really poor workmen, and call in the decrepit tubs aforesaid for rebuilding.

RAILROAD GAZETTE
N.Y., FRI., APL 8, 1908

If there is any one thing more than another that adds to the comfort of the traveler by night, it is the berth light used in the sleeping cars of most western roads. It changes discomfort into luxury and is probably the most highly appreciated improvement that has been made for many a day. It does not take a very old man to recollect when there were no lights in the staterooms of our river boats, but that is a thing of ths past, and it is to be hoped that the dark berth of a sleeping car will soon be in the same category. It seems strange that, though these lights have been used for years in the West, they are still a scarcity on eastern roads.

To paraphrase the enthusiasm of a western railroader, ws (westerners) are the people. Whenever anything is brought out that makes for comfort or luxury, or, I may add, that has an advertising value, we take it up and put it through. So we have electrically lighted trains and trains brilliant with acetylene and Pintsch gas, and we use the latest wrinkles in them all. We have tourist sleeping cars to accommodate those who want them; and that weary, forlorn crowd that fills the ordinary coach on the night runs of eastern lines is almost unknown." We also have the chair car that gives almost all the comfort of a Pullman parlor and costs nothing extra.

RAILROAD GAZETTE
N.Y., FRI., MAY 1, 1908

The Chicago Railways cars, mentioned in the *Railroad Gazette* of March 27, will be equipped with trucks built by the Pullman Co., and air-brakes furnished by the National Air-Brake Co.

RAILROAD GAZETTE
N.Y. FRI., FEB. 21, 1908

The Keeweenaw Central has ordered one smoking car, one baggage car and one express car from the Pullman Company.

The Idaho, Washington & Northern has ordered two passenger cars, one smoking car and one baggage car from the Pullman Company.

The Kiangsu & Chekiang has ordered two first and second class combination passenger cars, two straight second class cars and six third class passenger cars from the Pullman Company.

RAILROAD GAZETTE
NEW YORK, FRI., AP. 24, 1908

The Chicago & North-Western has ordered 300 steel ore cars of 100,000 lbs. capacity from the Pullman Co. and 250 from the American Car & Foundry Co.

A Trip on the South Manchuria Railway.

The following is taken from a recent folder of the South Manchuria Railway. It describes the pleasures and comforts of travel on that railroad:

The locomotives have been supplied by the most popular American Locomotive Co., and the Pullman Car Company has furnished the passenger coaches with the unsurpassed equipments of the Grand American Express. Under the present plan, parlor cars are to be connected with the Grand Express, which are, by the way, sort of observation cars, provided in addition with the comforts of a superior drawing-room, so that the eye being fed on the shifting landscape, the tedium of a journey through wild Manchuria, which must be quite unbearable otherwise, will be reduced to an almost imperceptible burden.

After devoting 17 pages to describing in language and with pictures of various colors, the delights of the line, the following announcement is made:

Before concluding, we are honor bound to inform the public that, prior to finishing the converting work of the line into the broad gage by the summer next year, the second-class accommodation in common vogue in Japan proper will be best at command, no first-class cars with dining equipments being run on the line before that time.

RAILWAY AGE
CHICAGO, FRIDAY, AP. 24, 1908

Chicago & Northwestern, which was reported in The Railway Age for April 17 to have placed an order with the Pullman Company for 600 all-steel ore cars, 100,000 pounds capacity, has divided this order between the Pullman Company and the American Car & Foundry Company, each company getting 300 cars.

RAILWAY REVIEW
CHICAGO, SAT., AP. 25, 1908

EQUIPMENT AND STRUCTURES

Cars and Locomotives.

—The Chicago & Northwestern has placed an order with the Pullman Company for 250 steel hopper-bottom ore cars of 1000 lbs. capacity. This fills a part of the inquiries reported last week.

—A quarterly dividend of $2 per share from net earnings has been declared by the Pullman Company, payable May 15, 1908, to stockholders of record at close of business April 30, 1908.

RAILROAD GAZETTE
N.Y., FRI., MAY 22, 1908

CAR BUILDING.

The Bloomington, Pontiac & Joliet Electric is in the market for three interurban cars.

The Chicago Railways have increased their order from the Pullman Co. from 300 to 500 cars.

The International & Great Northern is in the market for 1,250 cars instead of 750, 500 of which are box cars.

An agreement was entered into during 1907 between the New York Central and the Pullman Company, providing for Pullman car service for 25 years from January 1, 1905, and with the Western Union Telegraph Company, for telegraph service for 30 years from January 1, 1906. These contracts supersede all prior agreements with these companies and are more favorable in their terms to the railroad company. The company's holding of 5,748 shares of Boston & Maine stock, acquired during the previous year, was exchanged for an equal amount of the capital stock of the New Haven road during 1907. The New York Central's funded debt was not changed during 1907, but to obtain equipment for immediate requirements the New York Central, Lake Shore, Michigan Central, Big Four, and the Chicago, Indiana & Southern have become parties to an equipment trust dated Nov. 1, 1907, providing for an issue of $30,000,000 of equipment trust certificates, being 90 per cent. of the total cost of the equipment to be furnished under the terms of the agreement. J. P. Morgan & Co., and Drexel & Co. offered these equipment trust certificates in January, 1908, on the basis of about a 5% per cent. yield to the purchaser.

RAILWAY AGE
CHICAGO, FRI., MAY 22, 1908

Texas Tax Law Held Unconstitutional.—The supreme court of the United States rendered a decision on May 18, holding unconstitutional the tax law of Texas passed in 1905, which fixes a tax at the rate of 1 per cent on the gross earnings of railways when they lie wholly within the state and a proportionate tax when they lie partly within the state. The decision was rendered in the case of the Galveston Harrisburg & San Antonio against the state of Texas. The opinion was rendered by Justice Holmes. The court held that the law was an effort to regulate interstate commerce and that therefore the tax could not be collected. Chief Justice Fuller and Justices Harlan, White and McKenna dissented.

RAILROAD AGE GAZETTE
NY. FRI. JULY 24, 1908

CAR BUILDING.

The Chicago, Joliet & Kansas City is asking prices on 15 passenger cars.

The Spokane & International has ordered 100 freight cars from Haskell & Barker.

The Rutland Railroad has ordered one baggage car and two milk cars from the Pullman Company.

The Virginian Railway is said to be figuring on 2,500 freight cars. This item is not yet confirmed.

The Woodward Iron Company, Woodward, Ala., has ordered 10 ore cars from the Pressed Steel Car Co.

The Chicago, St. Paul, Minneapolis & Omaha has ordered one dining car from the Pullman Company.

RAILWAY REVIEW
CHICAGO, SAT., MAY 23, 1908

Train Holdup in Mexico.
Every occupant of two sleeping cars on a train between Mexico City and Vera Cruz was held up by two negroes on May 20, who secured loot of value reported at $10,000. The robbers entered the train at midnight while it was detained at Apizaco, in the state of Tlaxicala by heavy washouts. The passengers were in their berths at the time of the raid. One of the doors of the sleepers was locked, while at the other a robber stood guarding the aisle with two revolvers. The other visited each berth in turn and secured the plunder. After locking the passengers in the robbers escaped. One of the porters on the train was arrested at Apizaco for alleged complicity.

In January, 1898, the Pullman Company decided to make a test of anti-friction side bearings, and equipped ten cars with them. These cars were run opposite seven cars with ordinary flat side bearings. All these cars were equipped with new wheels, in order to determine the comparative merits of each form of bearings. The average mileage of the ten cars equipped with anti-friction side bearings was 112,462 miles, while the seven cars equipped with the old style side bearings averaged 101,264 miles, a difference of 11,200 miles, or eleven per cent. This would show a saving of $15.18 per hundred thousand miles run by each car by the use of anti-friction side bearings, and as the cost of these bearings is about $15.00 per car, the side bearings would be paid for in one year's service.

RAILROAD AGE GAZETTE.
NEW YORK. FRIDAY. JUNE 5. 1908.

I often think that the man who first designed the high car window that will only lift until the lower sash rail comes directly in the line of vision did more for the appearance of the car than he did for the comfort of the occupants. Most people like to look out of the window when traveling, and this bar, when the window is open, is an annoyance—not to call it a nuisance. But, then, by slouching down in the seat and looking under, a man can see out. It has, however, remained for the Pullman Company to cap this by an ingenious arrangement of screens by which the whole lower portion of the window up to the eye line is effectually blanketed. I was in a car like this the other day running south with a resort contingent, and it was pitiable to see that whole carload of passengers craning their necks to look out. They kept it up for about an hour and then settled back into their seats, wearied with the exertion, and for the balance of the journey they might as well have been in a rear flat of a city apartment house for all that they could see of the passing show. All of which merely goes to prove the soundness of the assertion made in these columns time and again—that it is well for these designers of railroad devices to try them out on themselves once in a while before condemning the traveling public to put up with them.

RAILWAY REVIEW
CHICAGO, SAT., JUNE 6, 1908

—The Chicago Railways Co. has increased its order with the Pullman Co. (noted in the Review March 28) from 300 to 600 cars and has placed an additional order for 50 all steel cars with the Pressed Steel Car Co. According to the orders of the board of supervising engineers the company will eventually increase the number of new cars to 1800. The 600 double-end pay-as-you-enter cars which the Pullman Co. is now building are to be 49 ft. 2 in. over all, 8 ft. 9 in. wide, and 11 ft. 8 in. high. The heater equipment and push buttons will be furnished by the Consolidated Car Heating Co., Albany, N. Y.; the brakes by the National Brake & Electric Co., Milwaukee, Wis.; the journal boxes by McCord & Co., Chicago, and the electric equipment by the General Electric Co., Schenectady, N. Y.

RAILWAY REVIEW.
CHICAGO. SAT. AUG. 8. 1908.

EQUIPMENT AND STRUCTURES

Cars and Locomotives.

—The Iowa Central Ry. has placed an order with the Baldwin Locomotive Works for two locomotives.

—The Iowa Central Ry. is asking prices on ten cabooses.

—The Harriman Lines are reported in the market for 6000 freight cars of miscellaneous types, but the rumor lacks verification.

—The Northwestern Elevated R. R., Chicago, which was reported in a previous issue to be in the market for 20 cars, has placed this order with the Pullman Co.

—Bids will be received at the office of F. C. Boggs, captain, corps of engineers, U. S. A., general purchasing officer, Isthmian Canal Commission, Washington, D. C., until Aug. 13 to furnish locomotives and dump cars; blanks and general information relating to Circular No. 458 may be obtained from above office or offices of assistant purchasing agents.

RAILWAY REVIEW.
Chicago, Sat, Aug, 29, 1908.

—The Chicago & Northwestern Ry., which was reported, in our issue of last week to be in the market for new passenger equipment, has placed an order with the Pullman Co. for 64 coaches of miscellaneous types.

EQUIPMENT AND STRUCTURES

Cars and Locomotives.

—The Missouri Pacific-Iron Mountain management has placed a contract with the American Car & Foundry Co. for repairing 2000 freight cars, which will be required for the crop movement and for general business as conditions improve.

—The Delaware, Lackawanna & Western R. R., which was reported in a previous issue to be in the market for 100 refrigerator cars, 60,000 pounds capacity, has placed this order with the American Car & Foundry Co.

—The Rutland R. R. has ordered one baggage car and two milk cars from the Pullman Co.

RAILROAD AGE GAZETTE
NY Fri AUG 14 1908

CAR BUILDING.

The Iowa Central is in the market for 10 caboose cars.

The Wheeling & Lake Erie has appropriated $114,000 for the repair of freight and passenger cars.

The Chicago & North-Western has, it is said, ordered 1,000 freight cars. This item is not yet confirmed.

The Delaware, Lackawanna & Western has ordered 300 steel hopper cars of 80,000 lbs. capacity from the American Car & Foundry Co.

The Northwestern Elevated, Chicago, reported in the *Railroad Age Gazette* of June 26 as being in the market for 20 cars, has ordered them from the Pullman Company.

The Panama Railroad, reported in the *Railroad Gazette* of February 21 as being in the market for 300 box cars, has finally ordered them from the American Car & Foundry Co.

The Isthmian Canal Commission, as reported in the *Railroad Age Gazette* of August 7, will receive bids until August 13, for 50 3-ft. 6-in. gage, six-yard, all metal dump cars, ten of which are for delivery on or before November 1, 1908, the remainder on or before January 1, 1909. These cars must have length such as to dump in a space 15 ft. long and the width over all is not to exceed 8 ft. The special equipment includes:

Axles	Open-hearth steel
Brake-beams	Simplex
Brake-shoes	Streetor, steel-backed
Brakes	Westinghouse
Couplers	Tower or Chicago
Draft rigging	Miner tandem
Journal boxes	McCord

The Chicago Railways Co. last spring ordered 650 pay-as-you-enter cars for delivery before January 1, 1909. The 50 cars being built by the Pressed Steel Car Co., as reported in the *Railroad Gazette* of March 27, are of all-steel construction, and the 600 cars ordered from the Pullman Co. will have steel underframes with wooden body covered by steel sheathing. They will have a seating capacity of 40 passengers and weigh 53,000 lbs. The wheel base of the trucks is 4 ft. 10 in., and the cars will measure 20 ft. 1 in. from center to center of trucks. The cars will be 32 ft. 5 in. long, 8 ft. 2 in. wide and 8 ft. high, inside measurements; 49 ft. 2 in. long, 8 ft. 9 in. wide and 11 ft. 8 in. high over all. The special equipment includes:

Air-brakes	National Brake & Elec. Co.
Center bearings	Barber and Ideal
Control system	G. E. K-35
Curtain fixtures	Acme
Curtain material	Pantasote
Destination signs	Hunter, illuminated
Door fastenings	Pullman
Dust guards	Positive
Fenders	Chic. Ry. Co. standard
Hand brakes	Peacock
Heating system	Consolidated
Headlights	Adams & Westlake
Interior finish	Cherry
Journal boxes	McCord
Motors	G. E., Interpole
Roofs	National standard
Safety treads	Mason or Universal
Sanders	Keystone
Side bearings	Woods roller
Springs	Pullman
Trolley poles and attachments	General Electric
Trucks	Pullman No. 150
Paint and varnish	Not decided
Fare registers	International

The Pullman Co. is screening the windows of its cars on certain Texas runs, as a protection against mosquitoes.

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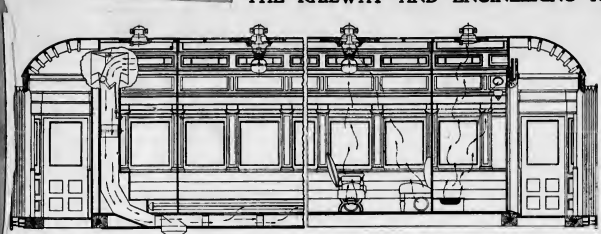

Fig. 1—Longitudinal Cross Section of Car, Showing Pennsylvania R. R. Ventilating System.

933; injured, 1797; at stations, passengers killed, 34; injured, 102; other persons killed, 510; injured, 682; at other points along track, passengers killed, 4; injured, 12; other persons killed, 3845; injured, 2263. The ratios of casualties indicate that 1 employee in every 369 was killed and 1 employee in every 19 was injured. With regard to trainmen—that is, enginemen, firemen, conductors, and other trainmen—it appears that 1 trainman was killed for every 125 employed, and 1 was injured for every 8 employed.

In 1907, 1 passenger was killed for every 1,432,631 carried, and 1 injured for every 67,012 carried. For 1906 the figures show that 2,222,691 passengers were carried for 1 killed, and 74,131 passengers were carried for 1 injured. With respect to the number of miles traveled, the figures for 1907 show that 45,440,253 passenger-miles were accomplished for each passenger killed, and 2,125,493 passenger-miles for each passenger injured. For 1906 the figures were 70,103,735 passenger-miles for each passenger killed, and 2,338,094 passenger-miles for each passenger injured.

Ventilating and Heating of Coaches and Sleeping Cars.*

About forty years or more ago, Professor W. Ripley Nichols, of the Massachusetts Institute of Technology, made some investigations of a system in use at that time known as the Winchell Ventilating System. This system was arranged so that air was admitted to the car at the end under the front hood, then allowed to distribute as it would through the car, and to pass out under the rear hood, without any attempt being made to warm it as it entered. Professor Nichols determined that 7000 to 10,000 cu. ft. of air per hour was furnished under favorable conditions. Later experiments with this system at Altoona indicated that 15,000 to 25,000 cu. ft. of air per hour was furnished, depending on conditions. It was also found that the movement of air in the car was hardly perceptible when the car was standing still, there being even less air movement with the large openings than is found in many of our more tightly closed modern coaches.

The next type of ventilating system was that found in the early type passenger coaches, known as the Spear Stove System. It consisted of hoods or intakes at diagonal corners of the car, which intakes were connected with the coal stove. The movement of the car forced the air down around the stove and into a box running the length of the car along each side above the floor. From this boxing or duct the warmed air was admitted into the car through various openings in the side of the duct. It then ascended through the body of the car and passed out through the deck sash. This system was a great improvement over any that had thus far been tried, but it was still subject to the following defects: When the car was not moving, the current of warm air was reversed and passed from the car out through the intake. Another trouble was, that the proportion of exits and intakes was not such as to give a balance of pressure between the inside and the outside of the car, and the exits were so much in excess of the intakes that cold air in the winter time would be drawn in around the windows and through every crevice. The trailing deck sash gave rise to various cross-currents, since it was often found that air would enter the car through the deck sash instead of going out, as it should. These cross-currents in the upper deck interfered with the proper burning of the lamps, and did not change the air to any extent as low down in the body of the car as the breathing line. The deck sash also admitted cold draughts, cinders and smoke overhead, to such an extent as to be very annoying. The construction of the deck sash had not been brought up to the higher state of development in which we find it in use to-day on some of the most improved equipment.

The Spear Stove System was modified later by removing the stoves and by substituting for them steam radiator pipes extending the length of the car in the air duct, and by adding ventilators on the upper deck of the car roof. This was an improvement, in that it eliminated the stove and gave an exit for air, other than the deck sash. With some slight modifications, such as the adding of extra radiators at the ends of the car, just inside the doors, this was the type of ventilating system that immediately preceded the modern indirect systems now in use.

The deck sash system, which is now very generally used, was evolved from various former arrangements of deck sash, and its construction has been improved so as to eliminate many of the objectionable features of the former arrangements. The use of wire netting outside of the sash has largely eliminated entering dirt and cinder. This deck sash method of ventilation necessarily separates the heating and ventilating systems, and does not warm the air before it comes into the car. No special air intakes are provided, except the deck sash, and the change of air in the car is limited to the amount that will pass in and out through these openings. When the deck sash is thrown open in the winter time, it very quickly relieves an overheated car, as some of the cold entering air drops into the body of the car to take the place of the heated and vitiated air. This momentary dropping of cold air is effective in relieving a stuffy and overheated car, but continuous draughts created in this way are very objectionable to passengers in cold weather. In the summer time, this dropping of the cool currents is not so pronounced, and the movement of air is not sufficient for good ventilation. This system has been used in the Pullman cars for a long time, but it is now being modified by the application of a late type of the Garland ventilator to the deck sash. This ventilator has eliminated the objectionable down-draughts by creating a strong exhaust, and thus directing all the currents upward and outward through the roof.

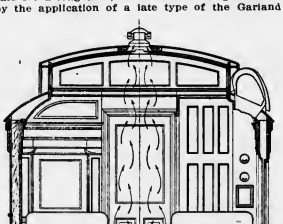

Fig. 2—Transverse Cross Section of Car, P. R. R. Ventilating System.

The present standard ventilating arrangement of the Pennsylvania R. R. was started in its development more than ten years ago, and is the result of a number of years of study and experimental work. A large number of tests were made, resulting in modifications and changes, each change being followed by runs on the road, and by analyses of air taken from the cars under various conditions. The arrangement, as thus developed, has been gradually applied to cars, until it is now in service on more than one thousand coaches. It embodies some of the most advanced ideas along the line of indirect ventilation and on this account the important features and principles are presented somewhat in detail. The system admits the air through hoods located on diagonal corners of the car. The air passes down a vertical boxing to a horizontal duct under the floor, which duct runs the length of the car between the side and the adjacent intermediate sills. Then the air ascends through slots in the floor to a longitudinal casting or duct containing steam pipes, extending along the sides of the car, above the floor and immediately over the air duct, thence through galvanized iron tubular pipes under each seat to the aisle, where it ascends and passes out through globe ventilators located over the lamps along the center line of the upper deck.

The system is designed to furnish one thousand cu. ft. of fresh air per hour per person, while working normally on a moving train. This figure was based on there being 56 passengers to the car, which would require 60,000 cu. ft. of air per car per hour, a complete change of air in the car fifteen times per hour, or once every four minutes. That this amount of air is furnished by the ventilating arrangement, has been proven by numerous tests which were made during its development. Samples of air were taken under various conditions from cars filled with workmen, while the train was running at speed with all the ventilators open; also, while the train was running with all the ventilators closed, as well as while it was standing still with all the ventilators open. The analyses were made by a test for carbonic acid in the air, and the calculations were made by determining the amount of fresh air that it would take to dilute the estimated amount of carbonic acid exhaled by the number of men in the car, so that the air in the car would equal in carbonic acid the amount that was actually found to exist in the samples taken. A representative test made in the winter time under normal conditions, showed by this method of calculation that 62,400 cu. ft. of air per car per hour was furnished, while the train was running about 30 miles per hour with all the ventilators open; 27,000 to 37,000 cu. ft. of air was furnished while running with all the ventilators closed, and about 23,000 cu. ft. while the train was standing with the ventilators open.

The general arrangement and the important details of the Pennsylvania ventilating system are shown by Figs. 1, 2 and 3. There are no patented features used, and a description of the essential parts of the system is as follows: The intake hoods, vertical and horizontal air ducts, and the heating ducts and pipes, form two independent systems, one extending along each side of the car. The intake hoods are located at the diagonal corners of the car on the roof close to the upper deck, where they will catch the least amount of dust and cinders, and their openings are covered with fine wire gauze. These hoods contain a flap valve, so arranged that the air has a free passage into the downtake from the direction toward which the car is moving. This flap valve is operated from the inside of the car and must be set for the proper direction by the trainmen. There is a butterfly valve located in the downtake, which is used to exclude foul air and smoke whenever necessary, as, for instance, when going through tunnels. The air passage or duct between the floor and sills of the car is formed by the removal of the cross-bracing in the wooden cars, and by the substitution of iron braces in the form of a trough section. These braces are bolted to the sills and act as efficiently as do the usual wooden ones. This duct contains a hopper for collecting the dirt and cinder, though occasionally it is necessary to remove portions of the false bottom for this purpose. The heating duct, located immediately over the air duct, contains two or more radiator pipes extending the length of the car. The heating surface is sufficient to give one sq. ft. for each 300 cu. ft. of pair per hour, when the system is operating normally with 60,000 cu.

*From the report of a committee to the Master Car Builders' Association, Atlantic City, N. J., June 17-19, 1908.

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way employment as follows: For general administration, 64,808; for maintenance of way and structures, 538,003; for maintenance of equipment, 352,181, and for conducting transportation, 713,465.

The report includes summaries showing the average daily compensation of 18 classes of employees for a series of years, and also the aggregate amount of compensation returned for the several classes. The total amount of wages and salaries reported as paid to employees during the year ending June 30, 1907, was $1,072,388,427.

Public Services of Railways.

The report shows that the number of passengers carried by the railways during the year ending June 30, 1907, was 873,905,133, this item being 75,959,017 more than for the year ending June 30, 1906. The passenger-mileage, or the number of passengers carried 1 mile, was 27,718,554,030, the increase being 2,551,313,199 passenger-miles.

The number of tons of freight shown as carried (including freight received from connections) was 1,796,336,659, which exceeds the tonnage of the year 1906 by 164,962,440 tons. The ton-mileage, or the number of tons carried 1 mile, was 236,601,390,103, the increase being 20,723,838,862 ton-miles. The number of tons carried 1 mile per mile of line was 1,052,119, indicating an increase of 69,718 ton-miles per mile of line in the density of freight traffic.

The average revenue per passenger per mile for the year ending June 30, 1907, was 2.014 cents. For the preceding year the average was 2.003 cents. The average revenue per ton per mile was 0.759 cent; the like average for the year 1906 was 0.748 cent. The earnings per train mile show an increase for both passenger and freight trains. The figures show an increase in the average cost of running a train 1 mile. The ratio of operating expenses to earnings for the year 1907 was 67.53 per cent. For 1906 this ratio was 66.08 per cent.

Earnings and Expenses.

The gross earning of the railways in the United States from the operation of 227,454.83 miles of line were, for the year ending June 30, 1907, $2,589,105,578, being $263,340,411 greater than for the year 1906. Their operating expenses were $1,748,515,814, or $211,638,543 more than in 1906. The following figures present a statement of gross earnings in detail and show the increases of the several items over those of the previous year: Passenger revenue, $564,606,343—increase, $54,573,760; mail, $50,378,964—increase, $3,007,511; express, $57,332,931—increase, $6,322,001; other earnings from passenger service, $12,674,899—increase, $1,360,662; freight revenue, $1,823,651,998—increase, $183,265,343; other earnings from freight service, $6,113,648—increase, $468,426; other earnings from operation, including unclassified items, $74,346,795—increase, $14,342,708. Gross earnings from operation per mile of line averaged $11,383, the corresponding average for the year 1906 being $923 less.

The operating expenses were assigned to the four general classes as follows: For maintenance of way and structures, $343,544,907; maintenance of equipment, $368,061,728; conducting transportation, $970,952,924; general expenses, $65,404,855; undistributed, $551,600. Operating expenses averaged $7687 per mile of line, this average showing an increase of $775 per mile in comparison with the year 1906.

The income from operation, or the net earnings of the railways, amounted to $840,589,764. This amount exceeds the corresponding one for the previous year by $51,701,868. The net earnings per mile of line for 1907 averaged $3696; for 1906, $3548, and for 1905, $3189. The amount of income attributable to sources other than operation was $286,583,942. This amount includes the following items: Income from lease of road, $124,705,781; dividends on stocks owned, $88,523,952; interest on bonds owned, $24,361,054, and miscellaneous income, $48,993,155. The total income of the railways ($1,127,173,706)—that is, the net earnings and income from lease, investments, and miscellaneous sources—is the amount from which fixed and other charges against income are taken to ascertain the sum available for dividends. Such deductions aggregated $677,712,518, thus leaving $449,461,188 as the net income for the year ending June 30, 1907, available for dividends or surplus.

The amount of dividends declared during the year under review (including $49,297 representing other earnings to stockholders) was $308,137,924, leaving as the surplus from the operations of the year ending June 30, 1907, $141,323,264. The surplus from operations as shown for the preceding year was $112,334,761. The amount of deductions from income as stated above, $677,712,518, comprises these items: Salaries and maintenance of organization, $648,835; interest accrued on funded debt, $344,242,617; interest on current liabilities, $16,671,532; rents paid for lease of road, $128,766,452; taxes, $80,312,375; permanent improvements charged to income account, $38,552,890; other deductions, $68,517,817.

The preceding figures for the income and the expenditures of railway companies are compiled from the annual reports of leased roads as well as of operating roads, and include duplications in certain items of income and also of expenditures on account of the fact that, in general, the income of a leased road is the rent which it receives from its lessee. The statistical report includes, however, a summary which presents an income account for all the railways considered as a single system, from which intercorporate payments are substantially eliminated.

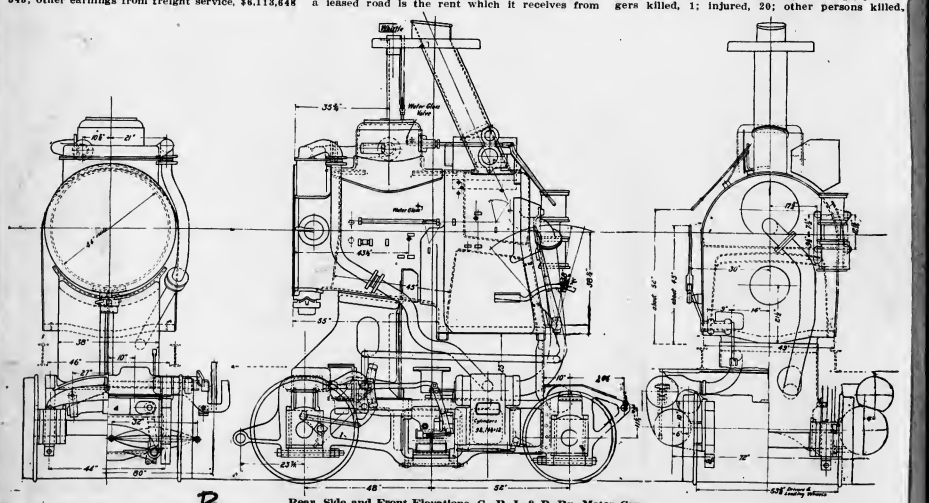
The complete report includes a summary showing the total taxes and assessments of the railways by states and territories, and also an analysis showing the basis of assessment.

Railway Accidents.

The total number of casualties to persons on the railways for the year ending June 30, 1907, was 122,855, of which 11,839 represented the number of persons killed and 111,016 the number injured. Casualties occurred among three general classes of railway employees, as follows: Trainmen, 2537 killed and 40,755 injured; switch tenders, crossing tenders, and watchmen, 169 killed, 1091 injured; other employees, 1828 killed, 45,798 injured. The casualties to employees coupling and uncoupling cars were: Employees killed, 308; injured 4353. The casualties connected with coupling and uncoupling cars are assigned as follows: Trainmen killed, 272; injured, 4062; switch tenders, crossing tenders, and watchmen killed, 19; injured, 149; other employees killed, 17; injured, 142.

The casualties due to failing from trains, locomotives, or cars in motion were: Trainmen killed, 497; injured, 5898; switch tenders, crossing tenders, and watchmen killed, 19; injured, 160; other employees killed, 64; injured, 653. The casualties due to jumping on or off trains, locomotives, or cars in motion were: Trainmen killed, 147; injured, 5496; switch tenders, crossing tenders, and watchmen killed, 12; injured, 171; other employees killed, 66; injured, 720. The casualties to the same three classes of employees in consequence of collisions and derailments were: Trainmen killed, 776; injured, 6273; switch tenders, crossing tenders, and watchmen killed, 7; injured, 58; other employees killed, 111; injured, 1019.

The number of passengers killed in the course of the year 1907 was 610 and the number injured 13,041. During the previous year 359 passengers were killed and 10,764 injured. There were 376 passengers killed and 8113 injured because of collisions and derailments. The total number of persons other than employees and passengers killed was 6695; injured, 10,331. These figures include the casualties to persons trespassing, of whom 5612 were killed and 5512 were injured. The total number of casualties to persons other than employees from being struck by trains, locomotives, or cars was 5327 killed and 4876 injured. The casualties of this class were: At highway crossings, passengers killed, 1; injured, 20; other persons killed,



Rear, Side and Front Elevations, C., R. I. & P. Ry. Motor Car.

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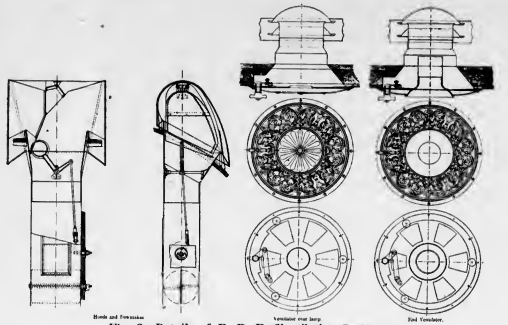

Fig. 3—Details of P. R. R. Ventilating System.

ft. of air passing through the car per hour. Steam is received at the middle of the car, flows to the ends, and the condensation is returned to the middle where it is trapped to the track.

The heating duct is connected with the air duct by slots through the floor 2 ins. wide and 12 ins. long. There is one of these slots between each two seats. The air passes through these slots into the heat duct, and thence through galvanized iron pipes 8 ins. in diameter leading to the aisle under each hseat. There are seven globe ventilators arranged along the center line of the upper deck, five of them over the lamps and one at each end of the car. The two end ventilators have a register in them, the apertures of which, when open wide, are a little more than equal to the area of the 6-in. ventilator tube. The closing of these registers shuts off all exit of air through these end ventilators, since there is no smoke bell to provide a constant opening, as is the case with the five combined ventilators over the lamps. The lamp ventilators have a register arranged around a smoke bell 3 ins. in diameter extending upwardly into the ventilator. The registers surrounding the smoke bell are operated the same as are those in the two end ventilators, while the smoke bells provide constant openings through the roof equal to about one-fourth of the area of the ventilators over the lamps. The deck sash in the car are tight and immovable, which feature restricts the exit of air entirely to the ventilators, where the proper proportion of opening is maintained.

The temperature, and the movement of air in the different parts of the car, is almost uniform in the winter time when the car is closed, and the currents of air are hardly active enough to be perceptible. Globe ventilators are used on the roof over the saloons at each end of the car, which, in connection with the close balance of pressure maintained in the car body, tend to cause a slight movement of air currents toward the saloons, rather than from them into the body of the car.

The amount of air passing through the car when running at speed is somewhat dependent upon the speed and the direction of the winds, and the apparatus should be regulated accordingly, by the trainmen. The two independent sides of the system depend for their relative efficiency upon the direction of the wind. If the wind is dead ahead, both sides of the system seem to be equally effective, but with the wind ahead and to the right or left, the side from which the wind is coming seems to do the most ventilating. When the train is running with the wind, neither side works quite as efficiently as under the former conditions.

The operation of the system is not entirely dependent on the movement of the car; since, when the car is standing still, the normal circulation of air is maintained by the rising heated currents, when there is heat or light in the car. This natural rising of the warm currents will furnish, under favorable conditions, about one-third of the change of air necessary for a crowded car. When a car is standing at a terminal and there is neither heat nor light in it, which is usually in the summer time, the proper ventilation is not furnished through the ventilating system, but is obtained by keeping the windows and doors open as much as possible.

As a whole, the system is efficient in almost every way when the train is running, but when the train is standing still, the system itself does not provide for any better ventilation than is afforded by the ordinary deck sash arrangement. This can clearly be seen in a smoking car; first, by observing the accumulation of smoke and the stillness of the air when the car is standing at the station awaiting departure with the doors open, and then, after the train starts and the doors are closed, by watching the gradual disappearance of the heavily laden air until the train has attained its speed; at which time the air in the car has become fresh and the car is almost cleared of smoke. The smoke passes from all parts of the car gradually and without showing the presence of cross-currents or draughts, and fresh air is supplied without attracting the attention of the passengers. The circulation and the distribution of air in the car act in the same general way when the train is standing still as when it is running, except that when standing still the air movement is slight, and depends upon the difference of temperature inside and outside of the car; while in the latter case, the air movement caused by this difference of temperature is augmented by the forcing in of the air at the intake and by the induced draught at the ventilators.

The conditions that prevail while a train is standing still are so quickly relieved after it gets into motion that the insufficient amount of ventilation supplied in the former case is comparatively of minor importance. This means that, in any system of day coach ventilation, we have first to consider the condition in which the passengers are kept enclosed for hours at a time during a long trip, and then, after this is made satisfactory, to take care of the local terminal conditions in whatever way seems advisable and in accordance with the necessity. This terminal condition is of more vital concern in the case of sleeping cars which may be in such service as require them to stand in a station during the night for a number of hours before the departure or after the arrival of a train. The only way to solve this difficulty will be to install a forced-draught system on a few cars that could be assigned exclusively to such service as was thought to warrant the extra expense. This would involve the installation of fans, ducts and registers, arranged according to the type of car.

The Pullman ventilating system will be recognized as the direct opposite to the Pennsylvania arrangement as just described, in that the heating and the ventilating systems are separate, and the air is not heated before it enters the car. This deck sash arrangement is used almost universally all over the country, in day coaches as well as in the sleeping cars. Many roads are using the earlier type of drop and trailing deck sash, while others have improved their conditions somewhat by introducing special ventilators, either in place of or in connection with the deck sash, or on top of the upper deck. There has been a tendency during the last few years to use various types of ventilators in the upper deck which induce strong exhaust currents from the car, without providing any intake. This has considerably changed the ventilating conditions in cars equipped with the deck sash system. The former theory was to allow fresh air to enter from above and to drop to the breathing line, while the latter theory is to create a sufficiently strong exhaust from the upper deck to keep the currents always moving upward, and to draw out the vitiated air in sufficient quantities to keep the car well ventilated, allowing the supply to come from wherever it will.

The strong exhaust principle has not been in use a sufficient length of time on coaches and Pullman cars to allow any definite conclusions to be reached in this report concerning its general application to existing equipment; but several ideas occur in this connection which may be worthy of mention. The fact that no special intakes are provided to supply the large amount of air that should be furnished for good ventilation makes it necessary that this quantity of air must be drawn either from the ends of the cars, or in through the cracks around the windows, or down the lamp jacks, if such happen to be open into the body of the car. This condition would be most objectionable in a day coach, as the admission of air through the lamp jacks would interfere with the proper burning of the lights, and it would not change the air to any extent in the lower part of the car near the floor. On the other hand, an admission of any such quantity of air as 60,000 cu. ft. per hour through the cracks around the windows and doors, would, if it could be accomplished, create intolerable draughts, and would make the occupation of the seat next to the window very undesirable in cold weather. These strong exhaust ventilators applied to a day coach with its single windows will always set up excessive draughts, even if very much less air is being drawn through the car than is required for good ventilation, and the result necessarily will be a condition of insufficient ventilation, and an excessively draughty car. The question of providing inlets to relieve the window draughts without changing to the indirect system of heating is a difficult matter, for the reason that any admission of untempered air at or near the floor would be just as objectionable as the window draughts, if not more so, since a cold floor is most certainly to be avoided. The strong exhaust principle should not be used as the only means of ventilation in building new coaches or Pullman cars, and should not be carried too far in applying it to existing equipment, without also providing an adequate intake of fresh, warmed air. If the heating system is not modified in the application of the exhaust ventilator to the present equipment, the strong, cold draughts are apt to be more of an objection than the additional amount of air movement is to be an advantage.

The exhaust ventilator with a strong draught, when applied to the Pullman car, has to meet a different condition and a different effect than when applied to the day coach; since the Pullman cars are more tightly constructed than the coach, and they do not need as much air for good ventilation, on account of the correspondingly smaller number of passengers that can occupy them. The window draughts are reduced to a minimum by the double sash, and the ends of the cars are tightly enclosed. A strong exhaust ventilator arranged to draw from such an enclosed space seems to be a great opposition of forces. Under such conditions, the amount of change of air and the capacity of the ventilators necessarily depends on the amount of air that can be drawn from the ends of the car and through the openings at the windows. Such partial vacuum created in the car body will doubtless cause a movement of air from the point of least resistance and thus cause an excessive draught

Fig. 4—Garland Ventilator.

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at an open window screen or ventilator or vestibule door. In a Pullman car, the point of least resistance to incoming air, when there are no screens in the windows, is apt to be at the ends of the car, and in this fact there lies a danger, since the odors from the smoking room and saloons are liable to be drawn into the body of the car. This only could be prevented by the use of ventilators having a force exhausting directly from these end compartments, greater than the force due to the combined action of all the ventilators in the body of the car. This feature is a more serious consideration in the day coach than in the Pullman car, since the saloons are not so much isolated from the body of the car, and since the additional end door leakage, and the increased opening and closing of the doors by trainmen, are more apt to cause the movement of air to be toward the middle of the car, than from the middle towards the ends. This objectionable movement of air can be controlled by the use of properly located and correctly proportioned ventilators, and the feature is only mentioned as one to be avoided.

The relation of the strong exhaust ventilator to the heating and ventilating of the Pullman car is a difficult matter to analyze; since the conditions to be met, especially in a sleeping car with the berths made up, are necessarily very complicated. The principal trouble with the sleeping car in the winter time, when the train is moving, has always been to avoid an excess of heat and a lack of ventilation in the lower berths, and a lack of heat and an excess of ventilation in the upper berths. In the summer time, the ventilation of the lower berth is improved somewhat by the use of the window screens, and most of the complaint is due to the conditions when a car is standing at a terminal. The application of the exhaust ventilator to a sleeping car not having special air intakes will not be very effective in relieving the overheated condition of the lower berth in cold weather; but it should improve the heating of the upper berth by drawing a greater proportion of the heat up along the windows and around the upper berth inside the curtains, instead of allowing the most of it to be absorbed in the lower berth, and to pass outside the curtain to the cold aisle and thus escape through the ventilators. The exhaust ventilator also prevents cold draughts from entering the deck sash, which draughts are often so objectionable in the upper berths, and in doing this it should further facilitate the heating, and at the same time it should diminish the excessive ventilation of the upper berth. The ventilation of the lower berths is doubtless improved to some extent by the increased air movement induced behind the curtains by strong exhaust ventilators in the upper deck. This ventilation might be still further improved by connecting a portion of the ventilator to a duct extending down through the walls of the car to the lower berth. It is the opinion of your committee that, as a whole, the general conditions of heating and ventilation of the sleeping car have been improved by the introduction of the strong exhaust ventilators.

The Garland ventilator, as now being applied by the Pullman Company, is shown by Figs. 4 and 5. It is constructed upon the aspirator principle, and its entire function is to draw the air from the car. The arrangement of the ventilator ducts and the force of the outgoing air largely eliminates the possibility for smoke, cinders and rain to enter the car through the deck, which is a serious objection to the ordinary deck ventilator arrangement. The addition of the central duct to this ventilator is the latest development in the direction of an increase of its exhausting power. As now constructed it is a simple and efficient exhausting arrangement and a further description in detail is unnecessary. It is thought that a partial vacuum in the car could be created to almost any degree that might seem desirable, by a sufficient application of a device of this sort; but this partial vacuum, in any other than a Pullman car, will in all probability prove to be more of a harm than a benefit. In a sleeping car at night, a strong exhaust seems to be an advantage and may prove to be a necessity as an assistance to an indirect heating and ventilating system.

The Central Railroad of New Jersey uses a ventilating system, which is a modification of the purely exhaust methods as used by the Pullman Company, in that an air intake as well as an exhaust, is provided by a combination ventilator. This ventilator has been in operation about five years on the above railroad, where it has been developed in connection with the Automatic Ventilator Company. This latter company has patents controlling the use of this device. This automatic ventilator is in service on 400 cars of the Central

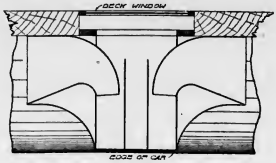

Fig. 5—Plan of Garland Car Ventilator.

Railroad of New Jersey, and on 40 cars of the D., L. & W. R. R. Experimental installations and tests have been made on a number of other roads which have installed the device on from one to eight cars. Among these the following roads have made tests which have been presented to the committee: The Wabash R. R., Long Island R. R., Duluth & Iron Range R. R., Chicago, Milwaukee & St. Paul Ry., New York, New Haven & Hartford R. R., Canadian Pacific Ry., Grand Trunk Ry., Interborough Metropolitan Ry.

This ventilator is shown in Figs 6 and 7. It is arranged to be substituted for the regular deck sash; or, in cases where it is desired to have an opalescent or other decorative inside sash as a part of the interior finishing of the car, the ventilator can be arranged outside of the sash, and so constructed that the opening of the deck sash will open the ventilator. The device also can be arranged to extend through the car roof, and may be adapted to a car with any design of upper deck. The general arrangement of it is always the same, and consists of two openings or ducts extending into the car, each about 4 by 6 ins. in size, with a deflector located between them and extending outwardly at right angles to the panel through which the ducts pass. The proper shutters, screens and other details are provided for controlling the device, and for the exclusion of dirt, cinders and rain. The end of the deflector is bent so as to scoop the air into the forward duct and to exhaust it from the rear duct. Some of the tests show that about 100 cu. ft. of air per minute enters the intake side of one ventilator and 116 cu. ft. is drawn out of the exhaust side, while running at speed. Tests are now being made to determine the extent that the air is changed in the lower part of the car. These tests involve very careful analysis of air at different hights and in different parts of the car and should show the proportion of air that descends to the passengers as well as the portion that enters one side of a ventilator and is immediately drawn out from the other side of the same ventilator, or from a ventilator in the deck across the car. A considerable difference in temperature between the outgoing and the incoming air, as has been shown by the numerous tests already made, would seem to indicate that an effective circulation is maintained down through the body of the car. A panel ventilator of this kind has been constructed to take the place of a screen in the lower berth of a sleeping car, the thought being that the occupant could manipulate it to admit air to the berth, or to exhaust it from the berth, as he might desire.

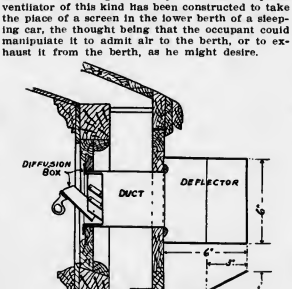

Fig. 6—Cross Section of Upper Deck of Car, Showing Ventilator of Automatic Ventilator Co.

The report has thus far included a description of three distinct systems or principles of car ventilation, and, in turn, illustrated them by an outline of three representative types, which have been in service sufficiently long to prove their merits and their failings: the Pennsylvania system, the Pullman or deck sash system, and the Central R. R. of New Jersey system. The first one is a balanced intake and exhaust system in which the air is warmed before it enters, and must pass through the body of the car before it is exhausted. The second is either a combination admission and exhaust deck-sash arrangement, or, in its later developments, is strictly an exhaust system without any special intakes, in which case the air enters wherever it can and is drawn to the upper deck from all parts of the car. The third system is a combination admission and exhaust arrangement located in the upper deck, with a special ventilator arranged to force and to regulate the air circulation. The first system involves the indirect method of heating, while in the other two arrangements the air is heated by radiators after it is in the car. All other arrangements in use are modifications or combinations of these principles, except the forced-draught or fan system.

The Chicago & Northwestern Ry. has modified the old Spear Stove System, which was the early form of ventilation used in their coaches, by replacing the stoves with large radiators located immediately inside of the end doors of the car, where, in addition to its use as a ventilating air heater, its radiating effect can be used to counteract the cold blasts from the door. The air for the ventilating system is scooped into the jack on the roof and forced down through the body of the radiator, and thus distributed to the car body. So also it will be found that the various other systems embrace portions or combinations of the principles already illustrated; and for this reason it seems unnecessary to describe the many other modifications which may be in use.

With the foregoing description as taken to represent the state of the art, your committee wishes to present a few arguments based on ten general questions involving proposed improvements, and to give their suggestions and conclusions with reference to them.

1. Is it possible to have a satisfactory passenger car ventilating system separated from the heating system; or, in other words, should the air be heated after it is in the car by radiators or by other direct means of heating, or should the indirect method be used in heating the air before it is admitted to the car?

The principal argument in favor of the direct method of heating is that fresh, cold air directly from the outside is more invigorating than it is after the life is taken out of it by passing it over heating pipes. Another argument is that passengers desire to see the deck sash open, and that this in itself makes them think they are getting good ventilation. While there may be some weight to the latter argument, they both seem to be misleading in not making a distinction between the heating and the ventilating of a car. Heating does not mean ventilation, nor does ventilation mean heating; since a stifling hot car may be well ventilated, and since a car kept at exactly the proper temperature may not have any ventilation at all. Most of the complaints made by the traveling public are the results of an improper heating of the cars rather than an insufficient change of air in them; not that the ventilation is less at fault than the heating of the car because variations in temperature are much more easily and quickly felt than is a lack of ventilation. The ordinary passenger would not be conscious of bad ventilation until he arrived at the end of a long journey with a dull headache, and even then the cold fresh air in the car would be the last thing to which he would ascribe his headache if the car had been kept at the proper temperature. The chances are that he would leave the car without any complaint being made, unless very perceptible odors were present, in which case the ventilation condition would be serious, and hardly any amount of open deck sash would give much relief. Thus it will be seen, that the complaints we hear most are on account of a car being too warm or too cold, which is not strictly a ventilation problem, and which complaints would be as liable to be made concerning the temperature of a car equipped with the deck sash as concerning one equipped with the indirect system of admitting the air. In fact, very much more complaint is heard when the air is admitted in a continuous cold draught in the winter than when it is tempered. A passenger can stand a little cold air for a few minutes, as when relieving an overheated car: but when a considerale

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ventilating panel of the "Automatic Ventilator" type, having screened openings which could be used to admit or to exhaust air, and which could be opened or closed at the discretion of the occupant of the berth. A proper manipulation of such a device should give better results than do the plain screen openings as now used. When the berths are made up, the berth curtains close in the space so tightly, that at times very little air enters the berth through the screen. The deflectors of such a ventilating panel would direct air into the berth to any extent that might be desired, and the amount of entering air could be regulated by opening and closing the intake side of the ventilator. On the other hand, if the outer air was too cold, the intake side could be closed altogether and the exhaust side used to draw tempered air through the berth from the aisle; or again, if the weather was mild, the intake and the exit sides both could be used together, to provide a maximum free circulation of air in the berth, if so desired. Very fine screens would necessarily have to be used on the intake side of such a ventilating panel, on account of the extra movement of air into the berth, which would tend to bring in with it an additional amount of cinders and dust. Still another method for ventilating the lower berth would be to extend a short duct through the walls of the car from each lower berth to a ventilator on the roof or under the car located in such a way that one ventilator would be provided for each lower berth or for each two adjacent berths. The openings into the berths might have a register or shutter which could be operated by the occupant, and the ventilators and ducts could be constructed to admit or to exhaust the air or possibly to do both. On the southern and southwestern roads, where, during certain seasons, the windows can not be opened at all on account of the excessive amount of dust and the heat of the external air, the balanced window system or ventilating panel is not so necessary, and the tighter the windows are made the better they will prevent the sifting in of sand and dust. The committee, believes, however, that a spring-balanced or counter-balanced sash having a double sash, could be constructed in such a way as to exclude cold draughts and entering dust, as well as does the present tight and almost immovable double-sash arrangement.

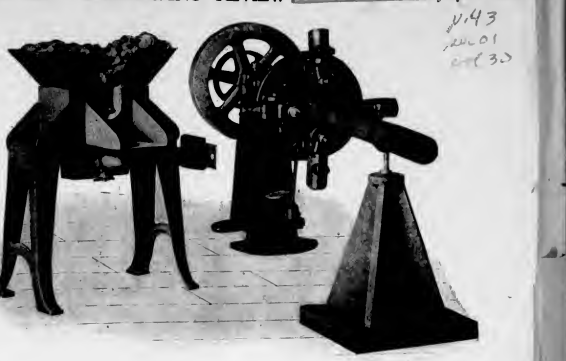
Your committee recommends that experiments be made with the view of ventilating the lower berth of the sleeping cars, either by means of a balanced window, a ventilating panel, or by a series of ducts and ventilators; such devices to be in addition to the regular heating and ventilating system of the car, and to be used at night when the berths are made up. It further recommends that extended experiment be made with these window and auxiliary arrangements in combination with the strong exhaust ventilators as now used.

(To be continued)

The Ryerson Flue Welding Machine.

A flue welding machine of the so-called roller type has been designed by Joseph T. Ryerson & Son, Chicago, and lately placed on the market. The machine consists of a heavy base on which a revolving shaft is mounted in suitable bearings. This shaft carries the driving pulley and fly wheel at one end, while at the other end and continuous with it is an internal roller carrying mandrel. This mandrel much resembles the ordinary roller type of flue expander, and it is designed to roll the inside of the tube during the welding process. These mandrels are made in all sizes and are interchangeable by simply screwing the threaded end into the end of the driving shaft. A steel head and arms carrying the adjustable rollers, revolve with the shaft, the rollers being disposed equidistant and in the same vertical plane with the mandrel rollers. By pressing the foot treadle, shown in the illustration of the machine, herewith, the outside rollers are brought down toward the mandrel rollers until they are only separated from them by the thickness of the tube wall.

This mechanism, it is maintained, is such that the weld must of necessity be true to gage and smooth. The Ryerson flue welding machine is driven entirely from the pulley or gear and no air or steam is necessary to exert the pressure on the welding point. It is asserted that it is the only machine which rolls the lap of the weld on the inside. The rollers are set in the mandrel and so arranged that the outside rollers are carried at the same time and at the same speed. Rolling the tube from both the inside and outside while welding is a new departure.



Ryerson Flue Welding Machine.

Possibly the greatest advantage claimed for the Ryerson machine is in the simple and accurate adjustment of the rollers. To set this machine the cold tube is placed upon the mandrel and the arms of the machine are brought down and adjusted to the thickness of the cold tube; this can be accomplished in less than five minutes. The rolls can be set to roll within a hundredth of an inch, and the mechanism is so arranged that it is absolutely positive and when once set every tube welded will be exactly of the same size. The rolls cannot be brought closer together by the foot lever than the point at which they are adjustable and locked.

This machine, in addition to welding, will scarf, spread or cut off tubes as desired; this is accomplished by simply removing the roll mandrel and substituting the proper scarfing rolls, spreading device or cutting wheels. While welding with this machine both hands are free to handle the tubes. A small light pair of special tongs furnished with the machine are used in one hand to prevent the tube from turning around while being welded. A suitable stand is also furnished with each machine. This stand is provided with an adjustable fork and spool roller and can be located in front of the machine to hold up the tube at one end while the other is being welded. The shipping weight complete is 1200 pounds.

Service on Electrified Suburban Roads.*

As yet, with the exception of the Inland Empire system, in the state of Washington, no important road has made an effort to move freight or long distance passenger trains by electric traction. The Southern Pacific and the Great Northern are preparing installations on mountain grades. The New York Central has with success utilized electric locomotives for a limited distance on long distance trains. The present development of electric traction is in suburban traffic and for comparatively short distances. It cannot too strongly be emphasized in this direction that when it is determined to electrify a steam road, that the operating department shall be charged with the laying out of the basing schedule. Such schedule having been tentatively fixed, the electrical engineering department can readily determine the amount of power and the other conditions required for successful operation. The operating department is clearly the one to prepare such preliminary operating schedule as their knowledge of current traffic conditions and prospective growth is not within the sphere of the electrical department.

The preparation of such schedules must be based on some knowledge of electric traction conditions, the basic principle of which is substitution of trains composed of a small number of cars, spaced at regular intervals, for trains composed of a maximum number of cars, spaced at irregular intervals. The cost of train crews must be considered, and the proper manipulation of equipment; and the operating department should confer freely with the electrical department in devising such schedules. A study should be made not only of existing traffic by stations and by terminals, but also of the possibilities of expansion at each station, bearing in mind the power consumption as above suggested between starting and moving trains. A proper schedule, therefore, at congested traffic hours, will embrace a suitable number of trains making all stops within a given zone, with a suitable number of trains passing through such zone express and stopping in one of the succeeding zones. This expansion will also prove attractive from a traffic standpoint in that comparatively distant stations at rush hours will obtain quicker service from the terminal. Having mapped out a preliminary schedule on the above lines, such schedules should be submitted to the electrical department for determination of the maximum number of cars which may economically be moved in one train based on the general power layout. This having been fixed, the operating department should then determine the final operating schedule, on which power-plant construction will be based.

Aside from the necessity of evenly spaced and distributed service from the electric power standpoint, such service is extremely attractive to the public.

In the electrification of the West Jersey & Seashore R. R., following the basic principle of electric operation, a continuous, frequent and regularly spaced train service with comparatively few cars per train was substituted for a steam service operated at irregular intervals with maximum number of cars at traffic hours. The winter schedule now in effect (spring of 1908), therefore, shows a daily total of 94 weekday trains as against 54 under the winter schedule in effect at this time in 1906, and on Sundays a total of 60 trains as against 18. The electrified zone is fed by several branches, i. e., the Salem, Penns Grove and Bridgeton branches and the Millville-Cape May line, operated by steam. Traffic conditions necessitated at rush hours the operation of through steam service between Philadelphia and these branches over the electrified tracks to avoid change of cars, so that a modified portion of the original steam schedule is still in existence, there being weekdays a total of 78 electric and 16 steam trains, and on Sundays 48 electric and 12 steam trains.

In establishing rates for the electric service, it was necessary to adjust all local rates on the basis of the through Philadelphia-Atlantic City rate, and this required a reduction of 20 per cent, except on commutation tickets, and was a natural stimulus to traffic, but it is believed that the more amplified train service was a still greater element in the increase. It is not practicable clearly to measure the increase in through traffic, as a portion of the through traffic handled by the electric trains between Philadelphia and Atlantic City was drawn from the steam service and perhaps the best measure of growth may be found in the strictly local

*Report of committee on Conducting Passenger Transportation, T. Jay Tomlinson, sub-committee, before the Association of Transportation and Car Accounting Officers, Niagara Falls, Ont., June 23, 1908.

amount of air is required continuously for any length of time in order to provide the necessary change of air for good ventilation, the committee believes that it must be warmed before it is introduced into the car by some kind of an indirect heating system.

In southern climates, where the winters are mild, the open window is used for the most of the year as a ventilating means, and the method of heating the car is not of such importance as it is in climates where the windows can not be kept open. The trains that run across the hot, dusty plains of the Southwest have another condition to meet, in that the cars must be kept tightly closed nearly all of the time, to exclude the dust, and in the summer time to exclude the heat. Proper ventilation under such conditions is very difficult, but the indirect method should prove most satisfactory for such a service.

It is the opinion of the committee that, for a given amount of air movement through a car, this air can be heated more satisfactorily and with less steam by the indirect method, than it can by the direct method, on account of a better circulation being maintained around the steam pipes by the indirect system; therefore, it would recommend that the indirect method of heating be used for all new equipment, and for such present equipment as it is practicable to change from the direct to the indirect system. For such coach equipment as it is not expedient to change to the indirect system of ventilation, your committee suggests that extended experiments be made in the combination admission and exhaust ventilators located in the upper deck.

II. Can the down-draught system as used in buildings be applied satisfactorily to passenger cars by admitting warm air overhead, to become diffused through the car as it gradually cools off and drops to the breathing line and to be removed from the car at the floor?

Many authorities on ventilation claim that the down-draught system is the only one that should be used for buildings, while others state that the warm air should be admitted near the floor through as many openings as possible and taken out at the ceiling. An argument in favor of the down-draught system is: that carbonic acid (CO_2), being heavier than air, fails as it is exhaled; also that the breath is exhaled in a downward direction, which assists the falling tendency, and therefore the carbonic acid should be taken out at or near the floor. Another argument is, that the only way to prevent perceptible air currents, is to introduce warm air overhead and allow it to spread uniformly under the ceiling and then to diffuse equally all through the room, rather than to introduce it at the floor and allow it to rise to the breathing line in currents which carry with them dust and microbes from the floor. It is hardly probable that the carbonic acid as exhaled is sufficiently heavy to cause it to fall, since it is usually at 10 to 15 degs. higher temperature than the surrounding air, nor would the addition of about 4 parts of carbonic acid to 10,000 parts of air be likely to counteract the rising tendency of the comparatively large body of air with which it forms a mixture. However, while this is entirely theoretical, it is the possibilities of actual application that govern, and on this account it is doubtful if the down-draught system could be applied satisfactorily to any type of passenger car. It would be very difficult to apply the various ducts, registers, etc., to the present car construction, and would be almost impossible to maintain the draughts in the normal downward direction, on account of the natural rising warm currents and the various cross-currents, due to open windows, doors, lamp currents, etc. This would be especially true in single-sash coaches, which are seldom tight against incoming draughts. A forced draught would be necessary in order to keep the currents moving in the proper direction, and even in this case the cold floor would be very undesirable. A downward movement of the air possibly might be maintained without the forced draught, by delivering fresh, warm air to the top of the car at a very much higher temperature than it is desired to maintain at the seat level, and thus compel it to drop as it cools off. This would require a construction sufficiently tight to eliminate all draughts, and would require the incoming air to be at a higher temperature and to be admitted in greater quantities than could be provided by the available methods for heating air in the limited space available in a car. The committee does not recommend the down-draught system of ventilation for any kind of passenger equipment.

III. Do we need a forced-draught system such as might be constructed by electric exhaust fans or blowers, and are the failings of our present system sufficient to warrant this extra expense in any of our passenger equipment?

It is generally conceded that a forced-draught system is not necessary for the usual equipment in regular service. Some few claim that a forced draught is necessary in order to maintain a down-draught system, and also in order to regulate the exact amount of air that passes through a car. The committee does not recommend the down-draught method of ventilation, and believes that a regulating fan in the intakes for controlling the amount of entering air when the train was running would give endless trouble.

With reference to special service equipment, such as dining cars, private cars, and certain sleeping cars, the committee believes that a proper forced draught or blower system is, in some cases, necessary and very desirable, as an addition to the regular methods of ventilating these cars. A sleeping car that stands at a terminal in the summer time from 6 p. m. until after midnight to receive passengers, should certainly have some auxiliary means for forcing ventilation, which could be used until the car leaves on its trip. It should be possible to keep a few cars in this kind of service, and to equip them with a blower or an exhaust fan system that could be used in connection with the ducts of the regular indirect heating and ventilating system of the car. These ducts should lead to each lower berth, and the system might be arranged, either to blow fresh air into the berth or to exhaust the vitiated air from it. The committee does not believe that the fan or blower system would be warranted for all regular equipment, since it would be too expensive to install, and since it could not be maintained in good condition by the ordinary attention that it would receive from the porters and train crews.

IV. Would it be an advantage from a ventilating standpoint to have the car windows arranged to open by dropping, instead of by raising; this

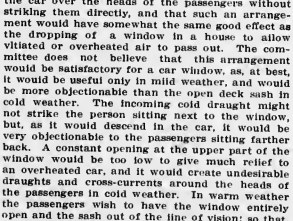


Fig. 7—Upper Deck Panel of Automatic Ventilator Co.

arrangement to be used in steel cars, or in such other equipment as it would be possible to provide sufficient clearance in the car side for the dropping windows?

Some claims are made that the dropping windows would allow cool, fresh air to be admitted to the car over the heads of the passengers without striking them directly, and that such an arrangement would have somewhat the same good effect as the dropping of a window in a house to allow vitiated or overheated air to pass out. The committee does not believe that this arrangement would be satisfactory for a car window, as, at best, it would be useful only in mild weather, and would be more objectionable than the open deck sash in cold weather. The incoming cold draught might not strike the person sitting next to the window, but, as it would descend in the car, it would be very objectionable to the passengers sitting farther back. A constant opening at the upper part of the window would be too low to give much relief to an overheated car, and it would create undesirable draughts and cross-currents around the heads of the passengers in cold weather. In warm weather the passengers wish to have the window entirely open and the sash out of the line of vision; so that, in this respect, it does not make any difference whether the sash is raised or lowered.

The construction features are greatly against this arrangement; since it would be very difficult to maintain a dropping window sash in a tightly closed position, and would be almost impossible to prevent cinders, rain and dust from entering and settling between the inside and the outside walls of the car. It is altogether probable that a dropping window would be hard for the passenger to operate, and that the general traveling public would not take kindly to an innovation of this kind.

The committee does not think that an open window or deck sash, without auxiliary means for directing or exhausting air through the opening, should be used as a part of the ventilating system of a car, except in warm weather when the average day passenger requires the windows and doors and practically everything to be thrown open. In this case the window becomes the entire means of ventilation. The amount of air that enters a car through an opening not provided with a ventilator of some kind, does not depend so much on the size of the opening and the speed of the car, as it does on the pressure maintained in the car, and on the direction of the wind. If only one window is opened in a car, the pressure is maintained inside, and very little air enters; but if another window is opened near it, or on the opposite side of the car, a very strong draught is immediately set up. This means that the amount of change of air through open windows and deck sash depends largely on the relative location of the openings, upon the direction of the wind, and upon the creation of a strong draught between the openings. Therefore, any ventilation that is attained by means of plain openings in a car windows and deck sash, is always accompanied by strong cross-currents. Some little air will enter the ordinary deck sash and drop to the floor in the winter, on account of its difference in temperature, but the largest part of the air movement in a car with ordinary deck sash is principally dependent upon the creation of a draught between two or more openings. In the summer time the difference of temperature between the outside and the inside air is not sufficient to cause any perceptible drop of fresh air inside the car, and the air movement through the ordinary open deck sash is almost entirely limited to the cross-currents in the upper deck, caused by the wind and the movement of the train. Thus it will be seen that the windows, whether they are constructed to open downwardly or upwardly, should not be used at all for ventilating a car in cold weather, and that it does not make any difference which way they open in mild weather.

The screen openings in a Pullman car often set up objectionable draught across a car, even in the summer time; but this is not the case in the sleeping car at night when the berths are made up, since the draughts are effectively broken by the aisle curtains. A dropping window in the lower berth would be a benefit from a ventilation standpoint, and might prove to be a betterment to this equipment, if it were not for the objectionable construction features. The committee does not recommend the dropping window for use in coach or Pullman car equipment.

V. Should a spring-balanced or counter-balanced window or ventilating ventilator be applied to the lower berth of a sleeping car, in such a way that it could be opened and closed in the summer time by the occupant of the berth, and would this be a practicable method of bettering the ventilation in sleeping cars in warm weather?

Some claims are made that the present screen arrangement in the lower berth is good enough, since in any event the porter would usually be asked to make the necessary adjustments before the passenger would arrive. This may be true, but the screen arrangement does not allow the occupant to close the window during the night if the berth becomes too cold, or to have a screen inserted if the berth becomes too warm. An easily operated window would place the ventilation of each berth in the control of the occupant. The objection to the balanced window, on the ground that the passengers will not use it on account of inexperience and would call on the porter to make adjustments, would hold true with reference to the few passengers that only travel occasionally, but the committee believes that the greater proportion of sleeping car travelers would be very quick to take advantage of any such means for regulating the ventilation and temperature of the berth. The operation would not be any more difficult than it is to raise or lower the many spring-balanced windows now used in car construction.

Various arrangements for window ventilation might be applied. A rolling screen might be attached to the window so that it would close and open with the window. Another arrangement would be to place the regular screen under one sash, and to have the other sash balanced and the fixtures so arranged that it could be opened or closed to whatever extent the occupant of the berth might desire. Another means of ventilation, and one which would not require the use of a balanced sash, would be to use, instead of the usual screen, a

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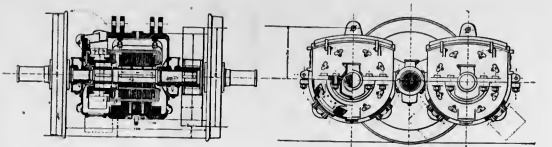

Fig. 3—Double Mounting of Motors on Axle of Electric Locomotive.

pany in imposing charges high enough to secure a fair income on the enterprise as a whole. The securities at market prices will have passed into the hands of subsequent purchasers from the original investors. Such circumstances should properly affect the decision of the tribunal engaged in determining whether the total of rates charged is reasonable or excessive.

To ignore them might so seriously and unjustly impair settled values as to destroy all hope of restoring confidence and forever end inducement for investment in new railroad construction which in returning prosperous times is sure to be essential to our material progress. As Mr. Roosevelt has said in speaking of this very subject:

"The effect of such valuation and supervision of securities cannot be retroactive. Existing securities should be tested by laws in existence at the time of their issue. This nation would no more injure securities which have become an important part of the national wealth than it would consider a proposition to repudiate the national debt."

The question of rates and the treatment of railways is one that has two sides. The shippers are certainly entitled to reasonable rates, but less is an injustice to the carriers. Good business for the railroads is essential to general prosperity. Injustice to them is not alone injustice to stockholders and capitalists, whose further investments may be necessary for the good of the whole country, but it directly affects and reduces the wages of railroad employes.

For what has been said, the proper conclusion would seem to be that in attempting to determine whether the entire schedule of rates of a railway is excessive, the physical valuation of the road is a relevant and important, but not necessarily, a controlling factor.

Physical valuation properly used will not generally impair securities. I am confident that the fixing of rates on the principle suggested above would not materially impair the present market values of railroad securities in most cases, for I believe that the normal increase in the value of railroad properties, especially in their terminals, will more than make up for the possible overcapitalization in earlier years.

In some cases, doubtless, it will be found that overcapitalization is made an excuse for excessive rates, and then they should be reduced, but the consensus of opinion seems to be that the railroad rates generally in this country are reasonably low. This is why, doubtless, the complaints filed with the Interstate Commerce Commission against excessive rates are so few as compared with those against unlawful discrimination in rates between shippers and between places. Of course in the determination of the question whether discrimination is unlawful or not the physical valuation of the whole road is of little weight.

I have discussed this with some degree of detail merely to point out that the valuation by the Interstate Commerce Commission of the tangible property of a railroad is proper and may from time to time be necessary in settling certain of the issues which may come before them and that no evil or injustice can come from valuation in such cases, if it be understood that the result is to be used for its just purpose and the right to a fair profit under all the circumstances of the investment is recognized.

The Interstate Commerce Commission has now the power to ascertain the value of the physical railroad property if necessary in determining the reasonableness of rates. If the machinery for doing so is not adequate, as is probable, it should be made so.

The Republican platform recommends legislation forbidding the issue in the future of interstate railway stocks and bonds without federal authority. It may occur in such cases that the full value of the railway and, as an element thereof, the value of the tangible property of the railway, would be a relevant and important factor in assisting the proper authority to determine whether the stocks and bonds to be issued were to have proper security behind them, and in such case therefore there should be the right and machinery to make a valuation of the physical property.

Ventilation and Heating of Coaches and Sleeping Cars.

(*Continued from page 590.*)

VI. Is it practicable to apply to a sleeping car an indirect system of heating and ventilating, having a series of auxiliary ducts leading to each berth, and registers to be operated by the occupant of the berth?

An argument against this method of controlling the ventilation and temperature in a sleeping car berth is: that no system should be used which is not under the entire control of the porter or trainmen, since nearly every passenger has a different idea as to what the temperature and ventilating conditions should be in the car, and since the result that one might be trying to accomplish, another might wish to counteract. Your committee entirely agrees with this argument, when applied to a sleeping car in the day time when the berths are not made up, or to an open chair car or coach; but in the enclosed sleeping car berths at night different conditions exist, since the berths are isolated one from the other and from the aisle, in such a way that the car is really divided into entirely separate compartments which require separate treatment. It is hardly possible for the porter to regulate these enclosed spaces in his effort to keep the body of the car at the proper temperature. It invariably happens that the aisle, and the berths that have not been made up, become so cold that one is compelled to retire in order to escape the draughts, only to find that the berth is very warm and stuffy, and not at all affected by the temperature and the extra ventilation in the aisle.

Fig. 4—Direct-Current Motor, 130 H. P. Capacity, of Weiner Stadtbahn Locomotive.

The light berth curtains now being applied do not isolate the berths so completely from the aisle, and do not make the ventilation of the berth so difficult as did the very heavy curtains formerly used.

There does not seem to be any means except the windows for inducing an air movement of any kind within the lower berth, and the problem is not so much a question of providing heat for the lower berth, as it is to find some way to shut off the heat, and to isolate the heating system from immediate contact with the berth, as well as to find a means for opening and closing an air inlet in the berth or under the berth that will admit an ample supply of properly tempered fresh air from the outside. The closing or boxing up of the heating pipes would largely prevent the absorption of so much of the heat in the lower berth, and would not allow any more heat to be admitted than was required by each occupant. Such an arrangement should include suitable levers or fittings for opening and closing slots or registers in the top of the heater boxing at the ends of each berth. This boxing, except for the register openings, should be closed off entirely from the body of the car, and should have admission openings to the outside air. These outside openings could be in the form of large hoods or scoops located near the ends of the car; or, a number of smaller openings could be arranged along the boxing at intervals, and deflectors used in connection with them to act in scooping in the air. It might prove desirable, in a sleeping car, to provide openings to the outside air without these deflectors or intake hoods, and to rely on a partial vacuum in the car, created by exhaust ventilators, to draw the necessary air through into the heater boxes, and thence through the registers into the body of the car. These openings from the outside, through the heater boxes in the car, would relieve the tendency of the exhaust ventilators to cause cold draughts at the windows, and, as the openings are located under the berth, the induced upward movement of air behind the curtains should provide good ventilation in the lower berth, as well as give the desired amount of heat for both the lower and the upper berths. Such an exhaust action as this, in the summer time, should prove effective in drawing cool, fresh air through the boxing and up through the berths behind the curtains, and, in addition, should relieve the strong draughts through the window screens.

The committee does not believe that it would be practicable to have a system of ducts with registers leading from the lower heater boxing to the upper berths. It would hardly be possible, except by forced draughts, to drive a current of air through such a complicated and crooked duct system, since every angle or turn in a duct increases the resistance, and very greatly reduces the amount of air that will pass through it. For the same reason, a sufficient current could not be drawn through these ducts by exhaust ventilators. Another trouble with such a system of ducts leading to the upper berths would be, that most of the available heated air would naturally rise through them, thus making it difficult to get any heat at all into the lower berth. A better arrangement would be to provide a heating and ventilating register only under the lower berth for the use of the section. An objection might be made to the plan for allowing the one person to regulate the temperature and the ventilation for the entire section; but it is hardly probable that the person below would allow sufficient heat or change of air to pass through the lower berth to make the occupant above as uncomfortable as is now often experienced. The upper and the lower berths are much more closely connected with each other than they are with the aisle or with another section, and the probability is that if the lower berth was regulated by its occupant in such a way as to be made reasonably comfortable by the admission of a liberal amount of warmed air in the winter time, or cool, fresh air in the summer, there would not be as much complaint concerning the condition of the upper berth as there is under the present conditions.

The committee believes that it is altogether practical to modify the present sleeping car equipment in such a way as to provide, under the ends of each lower berth, an opening for fresh air that can be controlled by the occupant. Such an arrangement might require some additional radiator pipes, and it might prove desirable to carry a branch of the heating duct to the aisle between

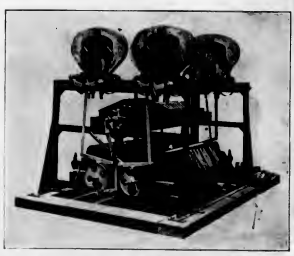

Fig. 5—Controlling Mechanism of Electric Locomotive, Weiner Stadtbahn.

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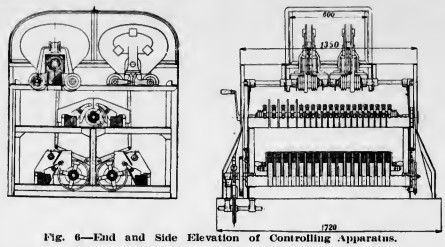

Fig. 6—End and Side Elevation of Controlling Apparatus.

each berth and the pillow boxes, in order to admit the warm air to the body of the car in the day time. These ducts could have registers in the ends of them, which should be closed at night, since it would not be desirable to lead warm air to the aisle, only to be wasted through the ventilators in the upper deck. The closing of these branch registers at night and the regulating of the registers under the berths by the occupants, would allow all the heat to be retained in the heating system and to be sent along and delivered to the various berths as might be desired. Your committee realizes the difficulties that might be experienced with any ventilating and heating system, in which the exits and entrances for air are thus allowed to be opened and closed promiscuously. However, it does not seem that this opening and closing of the places of admission would alter, to any great extent, the total amount of air that would pass through the car, but would simply facilitate the distribution of it to the parts of the car where it was most desired. It seems, then, that the fundamental requirement for a sleeping car with the berths made up, is an opening under the lower berth for freshly warmed air in the winter and for cool air in the summer located in such a way as to allow a distinct movement of air and good ventilation behind the berth curtains. Such openings under the berth for fresh air, even without any means of manipulating them by the occupant of the berth, should give much better results than does the present ventilating arrangement of the sleeping car.

Your committee recommends that extended experiments be made, with the view to modifying the existing sleeping car equipment, so as to provide openings under each end of the lower berth; these openings to be controlled by the occupants of the berth, and to be used to admit warmed air in cold weather and cool, fresh air in moderate weather. For new equipment, it further recommends a similar arrangement built into the car and applied in a substantial way, with all the requirements and accessories of a thoroughly complete indirect heating and ventilating system.

VI. Is it necessary to have an elaborate ventilating system in our light electric and suburban equipment; or would the ordinary deck sash system be sufficient for these short trip cars which are thrown open for the exit and entrance of passengers at frequent intervals?

Some claim that there should be as good a ventilating system in light suburban, steam or electric equipment as in any other. The argument is, that these cars usually carry more passengers than any of the other equipment, and therefore, they need as much, if not more, ventilation. This is true as far as the needs of ventilation are concerned; but it is not necessary to provide a large part of this air by the ventilating system, since it is usually furnished by the continued opening and closing of the doors. The crowded street car might be taken as an example in which it would be quite unnecessary to attempt a ventilating system that, in itself, would furnish heated air at the rate of 1000 cu. ft. per person per hour; and, on the other hand, where steam is not available, it would be a very difficult, as well as an expensive proposition, to furnish sufficient electric current to heat such large quantities of air as would be required by the occasional crowds in street cars or in electrically equipped suburban trains. For such light equipment as is only occupied by the passenger for a short time, your committee does not believe that an elaborate system of indirect heating is necessary, but that ample ventilation should be furnished by the use of the ordinary desk sash; or, where the conditions are more exacting, by the use of special ventilators applied to the deck in such a way as to admit and to exhaust sufficiently large quantities of fresh air. In such service as does not involve the frequent throwing open of the doors for the exit and entrance of passengers, which is often the case in the winter on certain suburban railways, the car should have a thoroughly efficient indirect heating and ventilating system, the same as other

Fig. 7—Detail of Switching Mechanism.

equipment in long distance service.

VIII. How much air should pass through a car in an hour to furnish good ventilation, and is there any better method for determining such amount than by a test for carbonic acid of samples of air taken from different levels in a car under various conditions?

A well ventilated space, according to the best authorities, is one that may be entered by a person from the outside, without the person being able to detect any of that odor which is characteristic of badly ventilated spaces. There is always a certain small proportion of carbonic acid in any outside air, which many tests have shown to be between 3 and 4 parts in 10,000 parts of air; and it has been found by careful analysis, that it is just possible to detect the characteristic odor mentioned, when the natural 4 parts of carbonic acid in the air has been increased by 2 parts of carbonic acid from human beings. A space, then, is well ventilated when it does not contain more than 6 cubic feet of carbonic acid to 10,000 cubic feet of air. It is thought very undesirable to breathe air containing 7 to 8 parts of carbonic acid, and to be injurious to stay any length of time in a space containing 10 parts of carbonic acid in 10,000 parts of air. In this connection it may be of interest to state that offices often contain 8 parts of carbonic acid, crowded opera houses and meeting halls, 14 to 18 parts, and crowded street cars as high as 22 to 23 parts of carbonic acid in 10,000 parts of air. The tests made by the M. C. B. committee in 1894 show in 10,000 parts of air 11 to 22 parts of carbonic acid in a sleeping car, 6 to 15 parts in a chair car, and 10 to 21 parts in a suburban coach. These high figures are hardly attained today, with the improved ventilating methods and the better attention that these matters now receive.

Tests have proven that the average person, such as rides in our cars, gives off six-tenths of a cubic foot of carbonic acid per hour. Sixty persons in a car would therefore exhale 36 cubic feet of carbonic acid, which amount would require 180,000 cubic feet of fresh air per hour to dilute it so that the air in the car would not contain more than 6 parts of carbonic acid in 10,000 parts of air, the theoretical requirement for good ventilation. This large volume of air equals 3000 cubic feet of fresh air per person per hour, which amount to your committee seems to be too great to pass through a closed car by any practicable methods.

In solving the car ventilating problem, the amount of air which should pass through a car is usually limited by the amount that can be heated, rather than by the amount as determined by theoretical calculations. The Pennsylvania experiments proved that 90,000 cubic feet of air, or half the theoretical amount, could be passed through the car by the methods used, but that only 60,000 cubic feet of air could be heated properly in zero weather. This amount, therefore, which is equal to 1000 cubic feet of fresh air per person per hour, or a complete change of air in the car once every four minutes, has been taken as the basis for their system of ventilation. These figures have been accepted by many others as a conservative and very fair basis for good car ventilation; and, since this amount has been found very satisfactory and has stood the test for more than ten years with very little complaint, this figure can be accepted generally as a basis, until a better one is established. At the same time, it may be thought desirable for larger cars and for certain kinds of service, to have a still greater movement of air through the car. This your committee believes can be accomplished with either the direct or indirect systems, by the addition of more hoods or ventilators on the

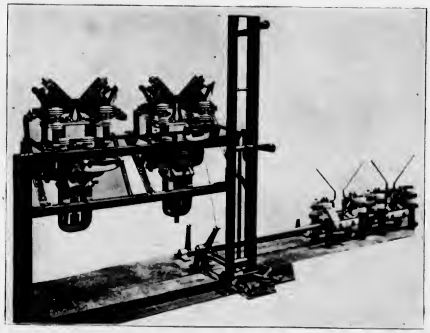

Fig. 8—Automatic Electric Cutouts of Weiner Stadtbahn Locomotive.

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enters; also, for all new equipment, that separate air and heating ducts, with openings between them and to the outside air, be arranged along the length of the car on each side. It also recommends for existing Pullman equipment, that extended tests be made for the purpose of determining the best methods for providing an ample opening for fresh air to enter through a heater box under the berths and for admitting warmed air from heat ducts into the car.

X. What is the best indirect method for heating the amount of air necessary for the good ventilation of a car, in the limited amount of space available?

Any car can be heated readily, if it is not ventilated. This is economy at the expense of health, since it only requires a very small amount of steam to heat a car, if the air is shut up and not allowed to get out. Moisture in the air is a very essential element in good ventilation, since even pure air is very obectionable when thoroughly dried out. This moisture is usually furnished in good proportions with the outside air admitted to a car by an indirect heating and ventilating system; but it quickly disappears when the air is retained in a heated car for any length of time. It is easy and cheap to heat confined air, but it becomes a more expensive and a more difficult problem to heat the large quantity of air that must flow through a closed car to furnish good ventilation; or, in other words, to heat the continuous current of fresh air that must be driven through the car and wasted at the ventilators at the rate of 1000 cubic feet per person per hour. This is health economy at the expense of money, and the price paid may be taken in the extra coal and steam consumption necessary to properly heat this continuous volume of air that passes into the car and out through the ventilators. The volume of air is large and necessarily moves rapidly. This requires a large heating surface and a proper splitting up of the currents as they pass over the steam pipes. No amount of heating surface or steam pressure will be sufficient to heat the car, if the air currents short-circuit around the steam pipes into the car and are not brought into contact long enough in contact with them to absorb the heat. Ventilation would be furnished in any event, but the car would be cold with a high steam pressure in the heating pipes. It is on this account that the mechanical construction of an indirect heating and ventilating system, including the size and arrangement of all the parts, is of much greater importance than is usually supposed. The system may be a success or an utter failure, depending entirely upon the arrangement and the size of the various parts. Thus the necessity will be seen for determining separately, by careful and extended experiments, the details of the heating and ventilating system for each type of car.

It may be found difficult, by the indirect methods, to heat very long cars, and, in severe climates, even the usual sizes and types of our present equipment, in which case it may prove desirable to provide additional radiators inside the cars near the doors or at other convenient locations, to be used in heating air after it is in the car. It is very probable that sufficient air to meet the ventilating requirements could always be partially tempered by the indirect system, in which event the inside radiators would be used to add sufficient heat to this tempered air to make the car comfortable. This would, however, prove necessary in cars 70 feet long, and especially in steel cars where considerable heat is liable to be lost by radiation through the parts of the steel construction that extend from the inside to the outside of the car.

The indirect system, as applied to the Pullman car, may require the use of straight steam instead of the hot water system as now used. It is probable that direct steam would be more satisfactory, and more easily regulated in connection with an indirect heating system, than would be the case with the hot water, and that, by such a change to direct steam, additional radiation inside of the car might not be necessary. The Baker heaters may be very desirable and useful in some service, but in the majority of cars they are very seldom used, and the extra expense of this equipment might be saved in many instances by the application of direct steam.

Your committee recommends that the piping, ducts and openings of an indirect heating system be proportioned and arranged in constructing new equipment so as to furnish warmed air for the required ventilation of the car; and that, in cases where a satisfactory temperature cannot thus be maintained in severe weather, auxiliary radiators of sufficient size be located inside of the car near the door, or at some other convenient point.

SUMMARY.

In connection with the various recommendations and suggestions presented in detail in connection with the ten questions some general conclusions are as follows:

A.—An indirect heating and ventilating system should be used in all new equipment, the air being introduced preferably at the floor and exhausted near the roof.

B.—Ample openings for fresh air should be provided under the lower berths of sleeping cars.

C.—A slight excess pressure or balance of pressure should be maintained inside of a car when the windows and doors are closed, in order to exclude incoming drafts at the windows and crevices. This can only be accomplished by driving the air into the car a little faster than it is drawn out, and means that the movement of the air must be made to pass through the car, largely by driving it in, rather than by drawing it out by means of strong exhaust ventilators.

D.—An ideal system would be one in which the pressures were balanced and the amount of air passed through the car was entirely independent of the speed of the train. From this it follows that the most efficient exhausting device is not necessarily the desirable one to use if its size must be so reduced to prevent overpowering the inlet when running at speed, that the car is almost bottle-tight when at rest. In other words, an exhauster that will act efficiently as a chimney as well as an exhauster, is to be preferred to an exhauster alone, however efficient the latter may be.

E.—Exhaust ventilators, designed for the purpose of completely controlling the movement of air in a car, should be used only for existing Pullman equipment, until it is possible to change this equipment to embrace the advantages of the indirect system of heating and ventilating. The best results from a ventilator with a strong exhaust is obtained in the sleeping car at night, at which time, on account of the enclosed berths, it may be found necessary to resort to the strong exhaust method in order to make an indirect heating and ventilating arrangement sufficiently effective.

F.—Sleeping cars in main service as requires the cars to stand at terminals during a considerable portion of the night, should be specially fitted with an auxiliary forced-draught ventilating system, in addition to the regular ventilating system of the car.

G.—Air should be admitted to and exhausted from a car without its being perceptible to the passengers, and it should not pass through the car in decided draughts when the car is closed. The entering currents, therefore, should be admitted so as not to come in direct contact with the passengers.

H.—A minimum of 1000 cubic feet of fresh air per hour per passenger should be furnished for good ventilation.

I.—Ventilating tests should be accompanied by a test for carbonic acid of air taken from different hights and from different parts of the car.

J.—The thing most desired in the heating and the ventilating of a car, as well as in the keeping of the seats and general interior clean and comfortable, is to shorten the season during which there is a tendency to open the car windows. This season should have a tendency to be shortened as the conditions of heating and ventilation are improved. The fact in the spring that there is a desire on the part of the general traveling public to throw open the windows, and the earlier in the fall that there is a tendency to close them, the more comfortable is the closed car, and therefore, the better the conditions of ventilation and cleanliness. This shortening of the open car season, then, may be taken as an indication of development and progress. A clean, comfortable and well ventilated interior will accompish much in keeping the car closed and in preventing the traveling public from pushing themselves as far outside of the windows as they can. Many travelers always desire to look out of an open window and to sit in the strong draughts as early and as late in the season as they can; and to do this is most pleasing to all, it is true, when the weather is mild and there is not too much dirt and cinder; but clean and comfortable traveling, as a general proposition throughout the year, can only be accomplished by keeping the windows closed, and it is the closing of the car that makes a ventilating system necessary. The air-handling arrangement, then, to perform its function, should maintain a slight pressure inside of a closed car, and always should keep the car full of good, fresh air.

Committee, S. G. Thomson (Chairman), B. P. Flory and T. H. Goodnow.

Progress of Work on the Culebra Cut of the Panama Canal.

An official statement of progress on the Culebra cut of the Panama canal is given in the Canal Record, and is interesting, both as compared with the magnitude of operations under the French and as showing in a graphical way what remains to be done to complete the work of excavation.

When the Americans took charge on May 4, 1904, the French with old excavators, small dump cars and Belgian engines were taking out about 33,000 cubic yards per month or about 30 per cent less than is now being taken out in a single day; but the Americans with the same equipment accomplished no more than the French. Modern equipment in track, rolling stock and steam shovels, and modern methods of transportation, all brought up to the maximum efficiency a year ago, are responsible for the present progress, and have made it possible to calculate with some degree of accuracy when the Panama Canal will be completed.

The French channel between Colon and the Chagres river near Bas Obispo, and between Pedro Miguel and La Boca varied in width from 50 to 200 feet, and it is being widened to 500 to 1000 feet, in addition to the excavating necessary to secure the minimum depth of 41 feet of water. That part of the canal between the Rio Chagres at Bas Obispo and the Rio Grande at Pedro Miguel, a distance of 9½ miles, known as the Culebra cut, was the only part on which any work was done hy the French after 1889. The accompanying diagram of yardage in the Culebra cut, together with a typical cross section at the narrowest point, shows the amount of work done by the French, the amount done by the Americans, and the amount yet to be done. About the same comparison will apply to work outside of the Culebra division.

An estimate was made the latter part of 1906 to find out how much remained to be taken out. It was based on the assumption that the canal would he excavated to the slope line shown on "typical cross section" as adopted by the board of consulting engineers. With the present method of handling the materal—steam shovels and work trains—it is practically impossible to confine the prism to these lines as the steam shovels make almost a vertical cut, leaving the slopes stepped instead of on a straight line. Then too, it is necessary to excavate for incline tracks leading from the cut at different points. Slides also have developed and probably will occur at different places, making it necessary to remove the material until the angle of repose is reached, which in many cases is a much flatter slope than was originally adopted. Thus the estimate of the amount of material yet to be taken out may be increased several million cubic yards, depending on the number of inclines that will be built and the number of slides that may develop.

The amount of material in the slides and the cuts for incline tracks that make up a part of the canal has been and will be estimated, as in the canal prism; and all that which is entirely outside of the canal proper, such as work for tracks, and diversion channels, has been and will he classed as accessory work, and is not included in the estimates of the number of cubic yards taken from the canal prism. A good deal of this necessary outside work has been done up to the present time, as the monthly reports show. While it is practically impossible to estimate exactly the number of cubic yards still to be taken out to complete the Culebra cut, yet with the method of cross sectioning adopted when the Americans commenced work and which will be continued until the canal is completed, the amount of material removed as measured in place can he determined within a few yards.

The steam shovels are compelled to handle a considerable amount of material for which they get no credit in the cross section measurement, such as the material that slides off the cars while being loaded hy a preceding shovel, and also the crushed stone used in ballasting the running tracks. There

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roof and more steam pipes or radiators inside of the car. However, when the good results that have been attained with the present figure are considered, there seems to be a point beyond which it hardly seems necessary to go, both from the standpoint of good ventilation and of economy. It also recommends that a minimum of 1000 cubic feet of fresh air per person per hour be used as the basis for car ventilation until such time as another figure can be determined to be a better one.

The carbonic acid test, as mentioned in connection with the Pennsylvania system of ventilating, seems to be about the only accurate way to analyze the various conditions of the air in a passenger car, and your committee recommends the general use of this method.

IX. What is the best method for introducing fresh, warm air into and removing it from a passenger coach and a sleeping car, by the indirect heating system, and at what point should it be admitted and removed?

The best place to admit warm air into a day coach seems from the latest developments to be through pipes, opening at the aisle under each seat. These pipes should connect with a double duct, arranged for distributing and heating the air. The lower duct should provide a free, unrestricted passage for the entering air, so that it is allowed to be distributed along the length of the car at the same time that it is being admitted to the heating duct above it. This allows all the air about an equal contact with the heating pipes, and distributes it effectively throughout the length of the car. If the incoming air was required to travel the length of the car in the ducts coupled to the heating pipes, neither the heating of the air nor its distribution in the car would be satisfactory.

When the parts are properly arranged, the speed of the train as well as the wind should force the air into hoods or intakes, located preferably on the roof and at the ends of car, and thence through a boxing to the lower air duct, where it should be divided as it passes through the slotted openings in the floor to the heat duct. The air currents should be divided and made to circulate around the heating pipes and as they pass in opposite directions to the ducts leading to the aisle under each seat. In the experimental stage and during the early development of indirect car ventilation, a continuous slot was cut in the car floor between the air and heat ducts, making practically one duct. This weakened the floor construction of the car, and it was found that the air was not held in contact with the pipes the proper length of time to warm it sufficiently. This led to the use of the separate slot arrangement which requires the air to come up through the floor at intervals into the heater box, and to divide several times as it passes into the car. Such a division of the air currents into an amount of contact with radiator pipes having a proper heating service and sufficient steam pressure was found to warm the air satisfactorily in zero weather, with the system acting normally. The ducts which lead the currents to the aisle in a day coach should occupy most of the space under the seats and should be made of galvanized iron so as to act as foot warmers in severe weather. Other means and places for admitting air into the car have been tried. Experiments were made by allowing the heat to pass into the body of the car through registers in the sides of the heating boxes extending along the floor, but this was found to be objectionable to the passengers sitting next to the window. Other experiments were tried with the idea of allowing warm air to come out through the top of the heating boxes and to pass up directly along the windows in order to neutralize their chilling effect; but it was found that these apertures in the top of the heating boxes were required during the day, as currents thus heated and admitted were objectionable to the passengers. Various other arrangements were tried for admitting the air from the air duct into the heating box and from the heating boxes into the body of the car, but none of them were as satisfactory as the arrangements now in use, and which have superseded these early methods.

The removal of air from the car has also been the cause of frequent experiments. Coaches having the indirect system of heating have been fitted up with a large number of ventilators, and also with a comparatively few. It was found with twenty ventilators on a car, that the front ones made more vacuum in the car than could be supplied by the regular intakes at the floor, and that perceptible currents of air were drawn down through the rear ventilators, thus causing the back part of the car to become cold. This difference of temperature at the two ends of the car was eliminated by closing some of the ventilators, which

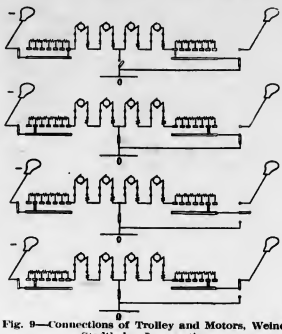

Fig. 9—Connections of Trolley and Motors, Weiner Stadtbahn Locomotive.

change seemed to prove that the intakes and exits in any system should be very nearly in order to obtain the best results. Some cars were fitted up with the ventilators arranged along the center line of the roof over the lamps and with four additional ventilators located between the lamps. These four ventilators were similar to the type without the smoke bell as shown on Fig. 3, and had registers with apertures about equal to the 6-inch ventilator tubes; but with the six large ventilators between the lamps and the five lamp ventilators, it was found that more air was taken through the car than could be properly warmed in zero weather. This led to the partial closing of the lamp ventilators so that openings 2 inches in diameter were left for the escape of lamp gases. These 2-inch openings resulted in the smoking of the head-lining, and it was soon found that the lamp gases were such an important element in the problem that they would have to be cared for in some better way. A combination ventilator with a 9-inch smoke bell was designed, and one was placed over each of the five lamps. These five combination ventilators, with a large one at each end of the car, was found to be about the correct arrangement to give the system the proper balance and the required flexibility.

An indirect system of ventilation should have its parts so proportioned that the air will be forced into the car at a slight pressure when the train is running, and the area of the ventilators when wide open in the normal position should be such as will very nearly maintain a balance of pressure between the inside and the outside of the car, and at the same time to allow the proper amount of fresh air to pass through the car. The ventilating registers should be constructed so that they can be partially or altogether closed in very severe weather in order to restrict the normal amount of air that passes through the car. The partial closing of the ventilators would increase the pressure inside of the car and thus further diminish the draughts that enter around the windows and doors. It would also retain the heat in the car without seriously restricting the air movement, as there would always be a constantly maintained exit for air through the smoke bells in the lamp ventilators. Such a restriction of air movement in cold weather would give very good ventilating results when there were very few passengers in the car, since the necessary change of air would be much less than is required when the car is crowded. This limiting of the air movement would result in a considerable saving of steam.

The permanent closing of the deck sash is an essential feature of a well balanced indirect ventilating system. It is necessary for the proper movement of air currents, and for the balancing of the pressure inside and outside of the car. This closing of the deck sash permits a cheap deck construction with a neat interior finish, and also prevents cinders and dirt from coming into the car overhead. When the windows and doors of a car thus fitted up with a balanced indirect system are closed tightly in the winter time, there is a normal movement of air, and the amount of it that passes through the car is regulated by the openings of the ventilators and by the pressure at the intakes. The opening of the deck sash or windows or doors destroys the balance of pressure and sets up various cross-currents, which, in a measure, counteracts the normal working of the ventilating system proper. When the car is thrown open in the summer time, there is no longer much use for a special ventilating system of any kind in a coach, since the open windows furnish fresh air to the passengers in a way that is most acceptable to the majority in mild weather. Many prefer the dust and dirt to the thought of being shut into a tightly closed car.

Small changes in detail affect any closely calculated and well balanced system of heating and ventilation, and each particular design of car requires special treatment to determine the construction and arrangement of the detail parts. Cars of extra length or special construction may require additional ventilators or hoods on the roof to increase the air movement through the car. It is thus seen how intricate and troublesome the ventilating and heating problem is, even in the most simple type of passenger car construction, the day coach. It is therefore impossible to devise a standard set of details, or even the general arrangement of a ventilating and heating system, that will apply to all cars alike. Only broad lines can be followed generally, and the arrangement for each particular case must be worked out separately.

The introduction of the warmed currents into a coach under the seats at the aisle end is about the only method available that will prevent the currents from coming in direct contact with the passengers. In a sleeping car, auxiliary branches of the heater duct could be brought to the aisle under the seats and between the pillow boxes, for use in the day time, and auxiliary registers could be placed in the main heater boxing under both ends of each berth for use at night, as described under Question VI. The intake arrangement of any car should dispose of the entering air currents, whether warm or cold, so that they escape the passengers to as great an extent as possible, and so that the heat of warm currents will not become entirely absorbed in the seats or chairs, or in the mattress or bed clothing of the berths. Warm air should be introduced at the floor in all equipment, so that its natural tendency to rise forms the normal ventilating currents of the car. This low admission of the heated air maintains a warm floor, and the rising currents carry away the exhaled impurities from the passengers more effectively than could be done by downward or cross-currents.

The removal of the air from the sleeping cars has already been mentioned in connection with the discussion of the Pullman system and in Question VI. The effect of the strong exhaust in combination with indirect ventilation is outlined and some suggestions made for future experiments.

The committee recommends that the warmed air from an indirect heating system be introduced at or near the floor for all classes of equipment, and be exhausted at the roof at a less rate than it

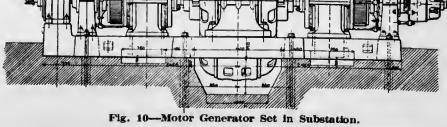

Fig. 10—Motor Generator Set in Substation.

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RAILROAD AGE GAZETTE
N.Y. FRI. JULY 17, 1908

CAR BUILDING.

The Chicago & North-Western has ordered one dining car from the Pullman Co.

The Calumet & South Chicago Electric, Chicago, has ordered one car from the Niles Car & Manufacturing Co.

The Boston & Maine is said to have ordered 20 coaches from the Laconia Car Co. This item is not yet confirmed.

RAILWAY REVIEW
CHICAGO, SAT., JULY 18, 1908

—The Northern Pacific Ry., which was reported, in a previous issue to be in the market for new equipment, has ordered 29 cars from the Pullman Co. These cars are for the Spokane, Portland & Seattle Ry. The order is divided as follows: Six first-class coaches, five second-class coaches, five baggage and mail cars, five baggage cars, three dining cars, two compartment sleepers, two buffet observation cars and one section sleeper.

—The Chicago, St. Paul, Minneapolis & Omaha Ry. has placed an order with the Pullman Co. for one dining car.

THE RAILWAY AND ENGINEERING REVIEW.
CHICAGO. SAT. OCT. 17. 1908

—The Harriman Lines, as reported in the Railway Review of October 10, have placed an order with the Pullman Co., Chicago, for 197 steel and 23 wooden cars. These cars are all for delivery about January 1, and the following equipment is specified for 201 of the cars. The specifications on the other 19 not having been given out as yet.

Axles	M. C. B.
Brakebeams	Chicago Railway Equipment Co.
Brake shoes	American Brake Shoe Co
Brakes	New York Air Brake Co.
Couplers	Janney-McConway & Torley
Draft rigging	Standard Coupler Co.
Journal bearings	Hewitt
Side bearings	W. H. Miner Co.
Springs	Railway Steel Spring Co.
Trucks	Double Body Bolster Co.
Wheels	Carnegie Steel Co.
Platforms	Standard Coupler Co.
Ventilators	Globe Ventilator Co.
Vestibules	Pullman Co.

Seventy-one of the cars will be steel coaches accommodating 72 passengers, and will be distributed as follows: Southern Pacific 40, Central Pacific 20, Houston & Texas Central 7, Oregon R. R. & Navigation Co. 6, Oregon & California 5, and the Houston East & West Texas 3. The coaches will weigh 94,000 lbs. and the over all dimensions are 67 ft. 8¾ ins. long, 9 ft. 11 13-16 ins. wide and 14 ft. high. The special specifications for these cars are as follows:

Bolsters, body	Commonwealth
Bolsters, truck	Commonwealth
Journal boxes	National Malleable Castings Co.
Curtain materials	Curtain Supply Co.
Heating system	Chicago Car Heating Co. (Vapor)
Lighting system	Safety Car Heating Co. (Pintsch)
Seats	Hale & Kilburn (steel)

Ten are 60 passenger steel chair cars for the Union Pacific. They will weigh 94,000 lbs. and will be 67 ft. 8¾ ins. long over platforms, 9 ft. 11 3-16 ins. wide over all at eaves and 14 ft. high inside. The special equipment includes the following:

Bolsters, body	Commonwealth
Bolsters, truck	Commonwealth
Journal boxes	National Malleable Castings Co.
Curtain materials	Curtain Supply Co.
Heating system	Chicago Car Heating Co. (vapor)
Lighting system	Safety Car Heating Co. (Pintsch)
Seats	Hale & Kilburn (steel)

Seventy-seven are to be steel baggage cars weighing about 90,000 lbs. and will be distributed as follows: Southern Pacific 35, Central Pacific 10, Oregon Short Line 3, Oregon R. R. & Navigation Co. 2, Oregon & California 2. The cars will be 60 ft. 1½ in. long over end sills, 9 ft. 11 13-16 ins. wide over all at eaves, and 14 ft. ½ in. high. Special equipment will be as follows:

Bolsters, body	Commonwealth
Bolsters, truck	Commonwealth
Journal boxes	National Malleable Castings Co.
Heating system	Chicago Car Heating Co.
Lighting system	Safety Car Heating Co.

Eleven of the number are to be steel postal cars, weighing about 108,000 lbs. These cars will have the same general dimensions as the baggage cars noted above and the same special equipment with the exception of the journal boxes which are to be furnished by T. H. Symington & Co. and the lighting will be by axle lights. The Union Pacific will receive 5 of these cars and the Central Pacific the other 6.

There are also 9 postal storage cars ordered, 5 for the Union Pacific and 4 for the Central Pacific. The cars are steel and have the same equipment and general dimensions as the eleven postal cars.

The order includes 11 wooden diners with steel underframes with seating capacity for 30. These cars will weigh about 125,000 lbs. and will be 72 ft. 6 in. long, 10 ft. ⅜ in. wide and 15 ft. 1 9-16 in. high over smoke jacks. The special equipment is as follows:

Bolsters, body	Double Body Bolster Co.
Bolsters, truck	Double Body Bolster Co.
Journal boxes	National Malleable Castings Co.
Heating system	Chicago Car Heating Co. (vapor)
Lighting system	Safety Car Heating Co. (Pintsch)

Five cars are to be 60 ft. wooden combination cars with a 30 ft. mail compartment and will be distributed as follows: Houston & Texas Central 2, Galveston, Harrisburg & San Antonio 1, Louisiana Western 1, Texas & New Orleans 1. The special equipment for these cars is the same as for the diners noted above, excepting the heating system, which is to be furnished by the Consolidated Car Heating Co.

Three cars will be 60 ft. wooden combination cars with a 20 ft. mail compartment. Two of the cars will go to the Phoenix & Eastern and 1 to the Gila Valley, Globe & Northern. The special equipment will be the same as for the diners noted above with the exception of the lighting, which will be oil instead of Pintsch gas.

The remaining 4 cars will be 69 ft. wooden combination cars with a 20 ft. mail compartment and will weigh about 104,000 lbs. They will have the same special equipment as the 3 cars noted above. Two of these cars will go to the Sonora Ry. and 2 to the Cananea, Yaqui River & Pacific. All of the wooden cars will be equipped with steel underframes.

RAILROAD AGE GAZETTE.
NEW YORK. OCTOBER 23. 1908.

The Harriman Lines, as previously reported in these columns, have ordered from the Pullman Co. 220 passenger cars, as follows: Seventy-seven steel baggage cars, 71 steel coaches, 11 steel postal cars, 9 steel postal storage cars, 10 steel chair cars, 30 steel underframe dining cars, five 60-ft. steel underframe combination cars with 30-ft. mail compartment, four 69-ft. combination cars with 20-ft. mail compartment, and three 60-ft. combination cars with 20-ft. mail compartment. All the cars are for delivery about January 1. The 77 baggage cars will be distributed as follows: Southern Pacific, 35; Central Pacific, 25; Union Pacific, 10; Oregon Short Line, 3; Oregon Railroad & Navigation, 2, and Oregon & California, 2. The 72 coaches will be distributed as follows: Southern Pacific, 30; Central Pacific, 20; Houston & Texas Central, 7; Oregon Railroad & Navigation, 6; Oregon & California, 5; Houston, East & West Texas, 3. Six of the 11 postal cars are for the Central Pacific and five for the Union Pacific and four of the nine storage postal cars are for the Central Pacific and five for the Union Pacific. The 10 chair cars are for the Union Pacific and the 11 diners will be distributed as follows: Union Pacific, 3; Oregon Short Line, 3; Oregon Railroad & Navigation, 3; Oregon & California, 2. The five 60-ft. combination cars with 30-ft. mail compartments are to be distributed as follows: Houston & Texas Central, 2; Texas & New Orleans, 1; Louisiana Western, 1; Galveston, Harrisburg & San Antonio, 1. Two of the four 69-ft. combination cars are for the Sonora Railway and two for the Cananea, Yaqui River & Pacific. The three 60-ft. combination cars with 20-ft. mail compartments will be distributed as follows: Phoenix & Eastern, 2; Gila Valley, Globe & Northern, 1.

The Pullman Company, Chicago, has awarded to R. & S. Solitt, Pullman building, Chicago, the general contract for the erection of a new shop building for the manufacture of steel cars. At present the company has a large shop which is used more for the erection of wooden cars and the new structure is designed as an addition to this building in order to facilitate the manufacture of steel equipment. It will be one story high, 450 ft. x 300 ft., of steel construction with pressed brick exterior and will cost $400,000. A contract for 500 tons of steel has been awarded to the Kenwood Bridge Co. A number of new shearing and punching machines and a 20-ton crane will be installed. It is expected to have the shop in operation by January 1.

The Pullman Company has filed with the Interstate Commerce Commission a new tariff which covers the entire country and is intended as a substitute for the four rate sheets of the Northwestern, Northeastern, Southwestern and Southeastern districts heretofore used. The new book is a readjustment only; there are a few general reductions besides the small seat rate cut, but none of great importance.

—The Pullman Co. has awarded the contract for 500 tons of steel to the Kenwood Bridge Co., Chicago, for the erection of a new shop building on the present car building shop at Pullman, Ill., for the purpose of providing room in which to build steel cars. The original project of erecting a large addition to the present plant for this purpose has been abandoned for the present.

RAILROAD AGE GAZETTE
N.Y., NOVEMBER 27, 1908

The Alabama State Railroad Commission has cited the Pullman Company to show cause why it should not revise its rates in the state. The citation grows out of a new tariff presented a few weeks ago without consulting the commission, and which is said to be in the main an increase over the old tariff.

A committee of prominent negroes of Oklahoma has nied with the State Corporation Commission a suit against every railway in the state demanding dining and sleeping cars for colored as well as white travelers. The petition also asks that white passengers be prohibited from passing through the "Jim Crow" coaches.

RAILWAY REVIEW
CHICAGO, SAT., NOV. 21, 1908

—The Northern Pacific placed an order Monday, Nov. 16, with the Pullman Co. for 30 first-class coaches, 20 smoking and first-class coaches, 3 mail and express cars and 10 baggage and express cars. The following is a list of the specialties which have been specified:

Bolsters	Double cast steel
Brakes	Westinghouse
Brake beams	Simplex
Drawbars	"Chicago" cast steel
Heating	Pullman heater with Gold steam heat
Platforms	"Standard Steel" type "A"
Seats	Haie & Kilburn
Springs	O. H. steel
Trap doors	Steel
Wheels	Steel tired, cast iron center

RAILROAD AGE GAZETTE
FRI., NOV. 6, 1908

Our Ponderous Passenger Cars.

Does it ever occur to the passenger, when he is sweeping through the country in the luxurious comfort of his heavily upholstered seat in a Pullman car, that, in order to give him that accommodation, the railroad company must haul over the tracks, not merely his individual 150 lbs. of weight, but an additional two tons of weight of the car? The largest modern Pullmans will weigh over 60 tons; and, since they provide only 16 sections, it follows that for every passenger carried, even when the car is full, two tons of dead weight must also be moved. In respect of the weight hauled per passenger, therefore, a Pullman train is the most extravagant and costly method of transportation in the world, as the following comparative facts will show. A touring car capable, when running on a good road, and if, like the railroad train, unhindered by speed restrictions, will carry seven people at the same speed as a Pullman train. The machine will weigh about 3,500 lbs., or 500 lbs. to the passenger. A 7-h.p. motorcycle, weighing 150 lbs. and running on a good road without speed restrictions, will transport two people on the level at a speed of 40 miles per hour; while a bicycle, weighing only 25 lbs., can be driven by an ordinary rider on a good road at from 12 to 15 miles per hour, and by a racing man at from 20 to 25 miles an hour. Even that good old standby, the two-seated buggy, weighing, let us say, 320 lbs., will convey its two passengers in comfort and safety at a speed of from 15 to 20 miles an hour. Summing up our comparative results, then, we find that the dead weight necessary to carry a passenger in a touring car is 500 lbs., on a motorcycle 75 lbs., on a bicycle 25 lbs., and in a horse-drawn buggy 160 lbs., as against the enormous load of two tons of dead weight necessary for the transportation of a Pullman passenger. It may be objected that the Pullman car represents an extreme case, and that much of the weight is due to the provision of sleeping accommodations; but we find that, even in the first-class day coach, the dead weight per passenger is very high, being, in the case of coaches accommodating, according to size, from 70 to 84 people, about 1½ tons of dead weight per passenger.—*Scientific American.*

RAILROAD AGE GAZETTE, FRI. OCT. 30, 1908

The Harriman Lines' dining cars and combination cars, which are a part of the 220 passenger cars recently ordered from the Pullman Co., are not to have steel underframes, as has been reported. The 30 dining cars and 12 combination cars are to be of all-wood construction and the remaining 178 are to be of all-steel construction.

The Illinois Central has ordered 400 Hart convertible cars from the Rodger Ballast Car Co. These will be built at the Detroit works of the American Car & Foundry Co., according to Harriman Lines specifications. The 681 steel gondola cars ordered from the Cambria Steel Co., as reported in the *Railroad Age Gazette* of Oct. 16, will be built to the same standard specifications, except that they will be equipped with heavy Miner draft gear. No passenger cars have as yet been ordered.

The Central of Georgia has ordered 24 passenger cars from the Pullman Company. This order includes 15 day coaches, five express, three combination mail and express, and one passenger and baggage car. These cars will be 60 ft. long, inside measurements. The bodies and underframes will be of wood. The special equipment includes:

Bolsters, body and truck	Double Body Bolster Co.
Brakes	Westinghouse
Brake-beams	Diamond special
Brake-shoes	American Brake-Shoe Foundry Co.
Brasses	Ajax
Couplers	Janney
Curtain fixtures	Forsythe
Curtain material	Pantasote
Draft gear	Sessions friction
Heating system	Gold
Journal boxes	Symington
Lighting system	Pintsch
Paint	Tuscan red
Platforms	Standard Steel Coupler Co.
Side bearings	Miner
Springs	Railway Steel-Spring Co.
Vestibules	Pullman
Wheels	Standard Steel Co.

The Colorado & Southern has ordered four dining cars from the Pullman Co. Three of these cars are for the Ft. Worth & Denver Cit. and one for the Colorado & Southern.

The Hilles & Jones Co., Wilmington, Del., has received from the Pullman Company an order for a number of machine tools for use on steel cars for the new plant being built at Pullman, Ill. The order includes a 12-in. gate shear to shear ⅝-in. plates 12 ft. long at one stroke, a heavy and substantial machine driven by a 40 h.p. motor direct connected; a number of single vertical shearing machines, one of which is provided with a turret head so the knives can be moved around and set at any position for the trimming of end sills and work of similar nature; and a number of vertical and horizontal punching machines, coping machines and a 75-ft. spacing table.

RAILROAD AGE GAZETTE
N.Y., FRI. NOV. 20, 1908

Pullman Company Annual Report.

The annual statement of the Pullman Company shows a total revenue of $31,820,241, with total operating expenses of $18,001,759. There were dividends declared amounting to $7,998,356, and this, together with depreciation and net earnings paid to associated interests, left a net surplus of $1,790,568. The company has a capital stock of $100,000,000. Cars, real estate and operating supplies are valued at $70,257,773, and cash investments and sundry accounts receivable bring its total assets up to $116,173,340.

In a supplement to the annual statement, Robert T. Lincoln, President, says that the value of the manufactured product of the manufacturing department for the year, and rental, together aggregate $24,868,653, against $37,236,417 in the previous year. Building of cars for sale almost completely ceased during the last half of the fiscal year.

The total mileage of railroads covered by contracts for operation of the company's cars was 198,610. The number of passengers using Pullman cars during the year amounted to 18,603,067, and the total car mileage was 497,708,660. This is an increase of 3 per cent. in the number of passengers and a decrease of about 3,730,000 in the number of miles run, or less than 1 per cent.

RAILWAY REVIEW
Chgo Sat Dec 5. 08

—The Illinois Central has placed an order for 19 passenger coaches with the Pullman Co. The cars will be of steel and built on the Harriman Lines specifications except that they will probably have

smoking compartments. The details regarding heating, lighting and other accessories will be decided during the next week or two.

RAILWAY REVIEW.
CHICAGO. SATURDAY. DEC. 19, 1908

is president of the road.

—The Pennsylvania R. R. is reported to have signed a contract with the Pullman Co., by which the latter is to build and supply for the use of the Pennsylvania 500 all-steel Pullman drawing-room and sleeping cars and pay the railroad about $700 yearly for handling each car.

—The Canton-Hankow R. R., of China, which

The great reformers of history, it has been said, met their troubles chiefly because they lived and wrought in advance of their time. The man who leads the way encounters many discouragements, most of which arise from ignorance rather than malice. Perhaps such philosophy occurred lately to officials of the Pennsylvania Railroad as they suffered in the small affairs of life what the pioneers of history suffered in large affairs. The Pennsylvania bought some new steel passenger coaches as we well know, and pursuing its intention of giving them actual service tests placed them in regular runs on various parts of the system. The new cars were the acme of the car builders' art, the appointments and fittings were of the finest that money could buy; and as such the coaches were somewhat of an innovation, perhaps even a novelty, when they took their place in the humble local trains on the lines east of Pittsburg. The state of Pennsylvania has a rough industrial population, and without being unkind enough to refer to their lack of familiarity with luxurious appointments, it may be mentioned merely that they are largely of foreign birth. A sumptuous toilet room adorns one end of the new steel coaches, and precisely for the purpose of removing the grime of coal mine and steel mill, a white and gleaming porcelain lavatory is fitted snugly into the corner of the compartment. But just here the traveling element of the male industrial population fell short. The lavatory was subserved to the uses of

the toilet, and in charity it must be acknowledged that there is a similarity in appearance, but the white and gleaming thing was used not for washing hands or face. The lavatories have been removed from the secrecy of the toilet compartment and now all is serene on the Pennsylvania.

The Pullman Co. is experimenting with a view to discover some material to replace the plush which

covers the seats of its cars, of which the public complains on account of heat in summer and of the dirt it collects and retains.

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RAILROAD AGE GAZETTE
NEW YORK, FRIDAY, DEC. 18, 1908

Investigation of the Pullman Company.

Commissioner Franklin K. Lane, of the Interstate Commerce Commission, began taking testimony at Chicago on December 14 in the proceeding of George F. Loftus, of St. Paul, Minn., against the Pullman Company. Mr. Loftus in his complaint makes a general allegation that the rates of the Pullman Company are excessive. William Hough, Second Assistant Auditor of the Pullman Company, who was a witness, said that the business of the company was precarious, as it was dependent for its continued existence on the railways. He admitted that it had contracts with the railways covering periods of 20 years, but said that most of these contracts have clauses allowing the railway to withdraw on six months' notice. One railway which had withdrawn from such a contract was the Chicago, Milaukee & St. Paul. The company owns 4,750 cars that are used on the railways of the United States, Canada and Mexico. The number in actual service during the year ended June 30, 1908, was 3,904, of which 3,383 were standard sleeping cars and 521 tourist cars. On an average 300 new cars were put in service each year. The company had made an appropriation of $3,000,000 to meet the loss on disused cars, which amounted to $332,000 in 1908. It was estimated that the cars are worth approximately $74,000,000. The cost of operation per car per annum was $1,906, and the cost of repairs and maintenance was $2,426. The sleeping car business, Mr. Hough said, is kept separate from the manufacturing business of the company, cars being bought from the manufacturing department for the manufacturing cost plus a profit of 10 per cent.

RAIL ROAD GAZETTE
N.Y. Friday Dec 18 08

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Hearing in Pullman Case.

Commissioner Lane, of the Interstate Commerce Commission, continued to take testimony in the case of George S. Loftus at Chicago until December 16. The testimony of William Hough, Assistant Auditor of the Pullman Company, showed that practically every important railway on the North American continent excepting the Chicago, Milwaukee & St. Paul, the New York, New Haven & Hartford, the Great Northern and the Canadian Pacific, run Pullman sleeping and parlor cars.

Richmond Dean, General Manager of the Pullman Company, who was a witness, said he thought 15 to 20 per cent. was a reasonable profit for a public service corporation. He stated that the net earnings of the company had declined within recent years owing to less favorable contracts with the railways and increasing expenses. The company always fears a reduction in its revenues through the withdrawal from their contracts of roads using large numbers of cars. Mr. Dean was asked if a reduction of 25 per cent. in the price of an upper berth would not increase the number of passengers hauled per car and thereby greatly increase the revenues of the company. He said that experience showed that this would not be the result. The New Haven had for years been charging between Boston and New York $2 for a lower berth and $1.50 for an upper, and the lowers were always taken first. A similar experiment was made four or five years ago by the Chicago & Alton, the Illinois Central and the Wabash, on a night excursion between Chicago and St. Louis. Passengers were sold tickets at 50 cents less if they would take an upper berth, but out of 192 of each kind of berths, only 14 lowers were left unoccupied while only 41 uppers were taken. Mr. Dean admitted that this showed that the public preferred lower berths, but said it also showed that a lower price for upper berths would not increase the demand for them.

Referring to a contract made with the Pennsylvania in 1900 he said this had already entailed, on the basis of the previous contract, a loss of over $300,000. The contracts are usually made by the president, vice-president and himself with the corresponding officers of the railways, but he said he had no knowledge of whether any railway officers were stockholders in the Pullman Company. He stated that the porters are paid $25 a month, and in addition porters and conductors are given an extra month's pay each year if their records at the end of the year are satisfactory. These extra payments amounted to $185,000 during last year. He thought the compensation of porters was as much as the same men could get elsewhere, and that the tipping system was not due to their small pay, but to the selfish desire of some passengers to get better service than others. Mr. Dean said that the only

thing that prevented the railways from owning their own sleeping cars was the constant efforts of the Pullman Company to give them better and cheaper service. With respect to the efforts of the company to make improvements he said it spent a great deal of money in experimenting with material. It had provided a new berth curtain because the public objected to the stuffiness of the old, and it now had several factories experimenting to make a material to replace the plush which covers the seats of cars and which travelers

RAILWAY REVIEW
Chgo Sat Dec 5. 08

—The Illinois Central has placed an order for 19 passenger coaches with the Pullman Co. The cars will be of steel and built on the Harriman Lines specifications except that they will probably have smoking compartments. The details regarding heating, lighting and other accessories will be decided during the next week or two.

RAILWAY REVIEW
CHICAGO. SATURDAY. DEC. 19, 1908

is president of the road.

—The Pennsylvania R. R. is reported to have signed a contract with the Pullman Co., by which the latter is to build and supply for the use of the Pennsylvania 500 all-steel Pullman drawing-room and sleeping cars and pay the railroad about $700 yearly for handling each car.

—The Canton-Hankow R. R., of China, which

The great reformers of history, it has been said, met their troubles chiefly because they lived and wrought in advance of their time. The man who leads the way encounters many discouragements, most of which arise from ignorance rather than malice. Perhaps such philosophy occurred lately to officials of the Pennsylvania Railroad as they suffered in the small affairs of life what the pioneers of history suffered in large affairs. The Pennsylvania

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RAILROAD AGE GAZETTE
NEW YORK, FRIDAY, DEC. 18, 1908

Investigation of the Pullman Company.

Commissioner Franklin K. Lane, of the Interstate Commerce Commission, began taking testimony at Chicago on December 14 in the proceeding of George F. Loftus, of St. Paul, Minn., against the Pullman Company. Mr. Loftus in his complaint makes a general allegation that the rates of the Pullman Company are excessive. William Hough, Second Assistant Auditor of the Pullman Company, who was a witness, said that the business of the company was precarious, as it was dependent for its continued existence on the railways. He admitted that it had contracts with the railways covering periods of 20 years, but said that most of these contracts have clauses allowing the railway to withdraw on six months' notice. One railway which had withdrawn from such a contract was the Chicago, Milaukee & St. Paul. The company owns 4,750 cars that are used on the railways of the United States, Canada and Mexico. The number in actual service during the year ended June 30, 1908, was 3,904, of which 3,383 were standard sleeping cars and 521 tourist cars. On an average 300 new cars were put in service each year. The company had made an appropriation of $3,000,000 to meet the loss on disused cars, which amounted to $332,000 in 1908. It was estimated that the cars are worth approximately $74,000,000. The cost of operation per car per annum was $1,906, and the cost of repairs and maintenance was $2,426. The sleeping car business, Mr. Hough said, is kept separate from the manufacturing business of the company, cars being bought from the manufacturing department for the manufacturing cost plus a profit of 10 per cent.

RAIL ROAD GAZETTE
N.Y Friday Dec 25. 08

complain of as hot in summer and as objectionable because it collects and holds dirt. Mr. Dean submitted a table which showed that 7,081,283 lower berths had been occupied on Pullman cars between Chicago and St. Paul during the fiscal year 1908, as compared with 1,727,509 uppers. Of the total, 572,603 berths had been used by persons having Pullman passes. In fifteen years, Mr. Dean said, depreciation of cars and other equipment of the company has been $23,884,000; during the past fiscal year it was $2,362,000.

Mr. Hough introduced figures to show that if rates were reduced as asked in Mr. Loftus' complaint, the gross earnings of the company on business between Chicago and St. Paul would be $4,932 per car and gross expenses $5,088, making a net loss of $156 per car per year. Gross earnings per car per year from this business now are $6,005.

B. H. Boussman, Assistant Auditor of the Chicago, Milwaukee & St. Paul, stated this road, which owns the sleeping cars it uses, earns about $10,000 per car per year between Chicago and St. Paul.

A novel feature of the hearing was the introduction of the testimony of two women, Mrs. Anna L. McNulty, Secretary of the National Art Society of Chicago, and Mrs. Anna E. Warwick, an employee of a Chicago department store, to show that upper berths were undesirable from the feminine viewpoint. They both said they thought an upper berth not worth half as much as a lower.

Officers of the Pullman Company claim that the company is in constant danger from a potential competition at the hands of the railways. The railways have grown so strong that the loss of one leading system would be a staggering blow to the Pullman Company. Contracts with the railways are not as favorable as they were years ago. It was a universal custom formerly to pay mileage for Pullman cars and there were no exemptions if the cars earned certain amounts. There were many maintenance contracts where the railways attended to all the repairs on the coach features of a car, only the Pullman features being repaired by Pullman. At one time the mileage receipts exceeded the amount expended in repairs, whereas now the repairs average $2,400 per car in excess of mileage. Last year's mileage aggregated $600,000 as against more than $2,000,000 a few years ago. There is scarcely any competition for the manufacturing department, so far as sleeping cars are concerned, although the American Car & Foundry Co. sometimes bids on such cars for the few roads which run their own sleepers. * * * Every time the Pullman Company makes a new contract the road exacts new conditions, and the Pullman Company earnings per car are very much less than they were 15 years ago. The railways object to the use of old cars and Pullman has to keep adding to the unserviceable list. "We have a large number on hand now that we would like to dispose of if we could get somebody to buy them."

thing that prevented the railways from owning their own sleeping cars was the constant efforts of the Pullman Company to give them better and cheaper service. With respect to the efforts of the company to make improvements he said it spent a great deal of money in experimenting with material. It had provided a new berth curtain because the public objected to the stuffiness of the old, and it now had several factories experimenting to make a material to replace the plush which covers the seats of cars and which travelers

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RAILWAY REVIEW, CHICAGO, OCT. 31, 08

Industrial Notes.

—Work has been started on the new Pullman car shops at Pullman, Ill. The foundations are now finished and the building will be completed inside of a couple of months. The new building will be 450x300 ft., and will cost about $400,000.

Mr. F. L. Wood has been appointed district superintendent of the Pullman Co. with headquarters at Denver, Colo., to succeed Mr. J. M. Smith who has been granted an indefinite leave of absence on account of ill health.

—The Central of Georgia Ry., as noted in the Railway Review of Oct. 24, has placed an order with the Pullman Co. for 15 day coaches, 3 mail and express cars, 1 baggage and seat car, and 5 express cars. The cars are to be 60 ft. long and of wooden construction. The following special equipment has been specified:

Axles	M. C. B.—5x9 in.
Bolsters, body	Double Body Bolster Co.
Bolsters, truck	Double Body Bolster Co.
Brakebeams	Diamond, Chicago Railway Equip. Co.
Brakeshoes	American Brake Shoe & Fdy. Co.
Brakes	Westinghouse Air Brake Co.
Center bearings	Cast steel
Couplers	3 stem-Janney
Draft rigging	Sessions, Standard Coupler Co.
Journal bearings	Ajax Mfg. Co.
Journal boxes	T. H. Symington Co.
Paint	Co. Std.—Tuscan Red
Side bearings	W. H. Miner Co.
Springs	Railway Steel Spring Co.
Trucks	Co. Std.—4 wheel
Wheels	Rolled solid—Standard Steel Co.
Curtain fixtures	Forsythe Curtain Supply Co.
Curtain material	Pantasote Co.
Heating system	Gold Car Heating & Lighting Co.
Lighting system	Pintsch—Single mantle
Platforms	Steel—Standard Coupler Co.
Seats	Hale & Kilburn
Interior finish	Mahogany
Vestibules	Pullman Co.

RAILROAD AGE GAZETTE
NEW YORK, FRIDAY, JAN. 22, 1909

The Chesapeake & Ohio has ordered three dining cars from the Pullman Company and 500 fifty-ton freight cars from the Standard Steel Car Co.

The Aurora, Elgin & Chicago, as reported in the *Railroad Age Gazette* of June 5, is having 25 trucks built by the Pullman Co. These will be delivered about February 1. The center plates for these equipments will be of the ball-bearing type, made by the T. H. Symington Co.

RAILROAD AGE GAZETTE
NEW YORK, FRIDAY, JAN. 29, 1909

JANUARY 29, 1909. RAILROAD A

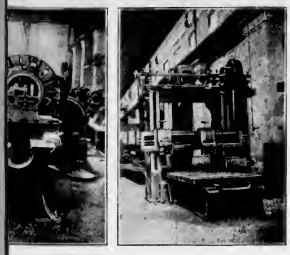
The New York Central Lines, reported in the *Railroad Age Gazette* of December 4 as being in the market for five postal cars, have ordered 11 of these cars from the Pullman Co.

The Chesapeake & Ohio order of three dining cars from the Pullman Company, reported in the *Railroad Age Gazette* of January 22, is a restoration of an order which was canceled about two years ago. No contracts have as yet been made for freight equipment.

RAILWAY REVIEW.
CHICAGO, SAT. JANUARY 9. 1909.

Pullman Wage Scales.

In the investigation by the Interstate Commerce Commission, officials of the Pullman Co. stated that the company has in its employ 4500 porters, whose wages aggregate between $1,700,000 and $1,800,000 a year. Porters on standard sleeping cars generally receive $25 a month, and those on tourist cars $35. Even more is paid, in some cases, to "porters in charge." Tourist car porters have more heavy work to do, less agreeable environment, and fewer fat fees. Usually the porters must provide their own food. The company serves them meals at 25 cents each. A credit mark system is maintained. Porters who attain the 100 per cent mark receive an extra month's pay. Last year $185,000 was paid out in this way. This year the amount will be $250,000. Old porters are carried on the payrolls at $12.50 to $15 a month by a pension arrangement adopted two years ago. These disbursements amounted to $25,000 last year. A few conductors were included. The company has 2500 car cleaners in service at $1.50 a day for men, and 90 cents to $1 a day for women. Cars are cleaned at the end of every run. A comparatively new official position is that of superintendent of fumigation. Cars are fumigated at least once a month, and in sections where tubercular or other infectious diseases are prevalent, the process is repeated several times each month. It costs $1.25 to $1.50 to fumigate a car.



otor-Driven Tools.

every illustration. The fact that good, attractive work from an artistic standpoint may also be technically correct when done by one who knows, is proven. And even the casual reader cannot avoid remembering the virtues claimed for the Bettendorf cast steel truck frame.

The Trend of Railway Affairs in England.*

There has been very little consolidation and centralization of business and industrial interests in England compared to the United States, but the tendency is becoming very strong that way, and at the next session of parliament several important corporations, hitherto competitors, will ask authority to combine their business for the sake of economy. The advantages of amalgamation are recognized and public opinion is being educated to see them, but there are limitations to the action of joint stock companies which cannot be removed without parliamentary action. Hence there are only a few "trusts" in Great Britain; but there will be more.

For several months interesting rumors have been around financial and transportation circles concerning a huge combine in the railway world. They have been promptly contradicted, but have been revived again and again, and now they are beginning to be recognized as "feelers" sent out to be discussed and commented upon for the sake of testing and developing public opinion with a view to future applications to parliament for permission to reduce expense and increase dividends upon competing lines of railway. The managers have recently made traffic arrangements that will result in a considerable saving to all concerned without depriving the public of the conveniences and luxuries of travel they now enjoy. It is proposed to go still further and issue interchangeable tickets at the same rates that are now charged and let passengers have the option of traveling by any line or train that suits them best, and thus save the enormous sums of money that have been expended in advertising and in other means of securing business. This sort of an alliance can be arranged and operated without the permission of parliament, and it is considered the first step toward a general amalgamation.

A period of great commercial and industrial prosperity, extending over eight or nine years, has apparently closed without bringing the transportation companies that share of the benefits to which they considered themselves entitled. Traffic has developed enormously. Additional facilities and conveniences had to be provided which have absorbed all the additional earnings without increasing the dividends or the surplus reserves. During the last ten years the railway equipment of Great Britain has been enlarged 32 per cent, while the net earnings have increased only 11 per cent, which is barely sufficient to meet the interest charges upon the money borrowed to make the improvements. And now that a decided and universal depression has set in, attended by a marked falling off in traffic, the interest charges and other fixed expenses continue, and the railway companies find themselves in possession of an expensive lot of unnecessary rolling stock and other facilities that are useless and are earning nothing. The cost of operating continues as large as ever, but the earnings are falling off. There has been a general advance in wages during the prosperous times; there has been a considerable increase in the cost of fuel and all other forms of supplies which cannot be readjusted to present conditions. And the consequences have been painfully apparent in the recent dividends.

I am informed that every railway of importance in the kingdom has had its dividends reduced except two. Stocks that have been paying 4½ per cent year after year have dropped to 4; those that have been 3½ have dropped the half per cent, or a quarter, and none of them had any surplus to add to their reserves at the recent directors' meetings. The result can be understood only by those who are familiar with the character of the British investors. Shares in railway and other joint stock companies are much more widely distributed in England than in the United States. They are held in small lots by people of limited means, and the dividends are often the only sources of income of the holders. Hence fluctuations in earnings are a very serious matter, and the only way in which the managers of the British railways can make both ends meet in the present crisis is to retrench in such directions as will not affect public confidence and patronage.

The managers of competing roads, who are all in the same predicament, have got together and have decided to stop the expensive rivalries that have been prevailing in the past, in speed, in luxurious appointments, in unnecessary service, in advertising and costly printed matter and in the employment of agents and solicitors to work up business for large salaries and commissions.

For example, 57 trains leave London for Manchester by three different railroads every day. Fifty-four trains leave Manchester for London. Thirty-two trains leave London for Glasgow and Edinburgh daily, and the same number make the return journey by three competing routes. A corresponding number run between other important competing points, for every time the Northwestern has put on a new train the Great Northern has considered it essential to do the same, and the Midlands has followed suit, or vice versa. Under the present agreement it is proposed to take off about half of these trains, each of the three roads suspending the same number, and running them at different hours, so that the public will have nothing to complain of. If a passenger wants to leave at 9 o'clock he must go by one road; if he wants to leave at 10 he must go by another, and so on. A similar arrangement has been made with through sleeping cars to and from the north of Scotland, which have been running empty on three lines when one could have furnished all the accommodations necessary. Hereafter a through sleeper to Aberdeen will leave London Monday by one route, Tuesday by another, and so on, the three lines alternating. And really it does not make much difference to the traveling public, because the distances are about the same and the starting points are not far apart.

Few people patronize sleeping cars in Great Britain. They are too expensive a luxury for ordinary travelers, and the distances are short, compared with those in the United States and the continent. It costs about three times as much to take a sleeper in England as in the United States. Those who are agitating for a 2-cent-a-mile rate and a reduction in Pullman charges should travel for a while in Europe, to realize how well off we are in these respects at home. Second-class rates in England are about equal to first-class in the United States; first-class rates are about $3 per cent higher, and a first-class ticket with the sleeping car rate added makes a trip so expensive that people who are compelled to journey by night carry a rug, hire a pillow at the station for sixpence, and stretch out with their clothes on.

The Socialists are already advocating what they

*From a letter by William E. Curtis, in the Chicago Record-Herald.

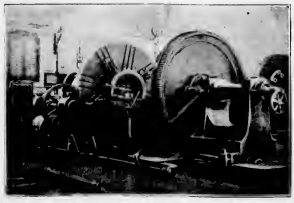
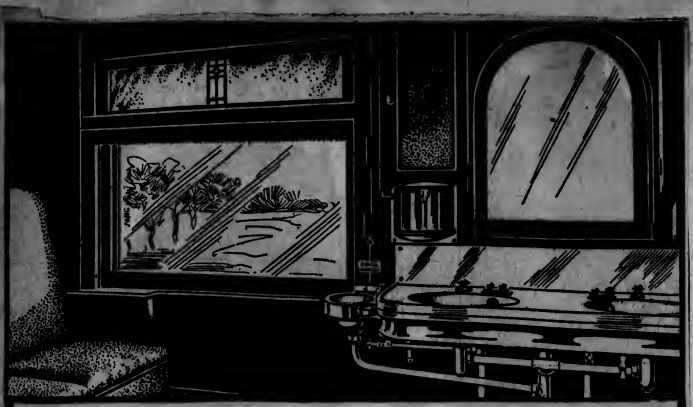


Fig. 5.—Eighty-Four-Inch Wheel Lathe with Motor and Starting Box.

—The Pullman Co. has just completed its first all-steel Pullman sleeping car, and has sent the same out for a test run over the Pennsylvania and New York Central lines. It is said that if this car proves satisfactory that all of the sleeping cars on the New York Central and Pennsylvania will be replaced by all-steel cars.



DENTAL LAVATORIES—THE "ALTON'S" LATEST

Here is something new, an innovation never before conceived by any railroad—a dental lavatory. Yet it is only another example of the way in which the Chicago & Alton adopts new ideas for the comfort and convenience of its patrons.

Not only did the Chicago & Alton run the first sleeping car, the first dining car and the first reclining chair car, but it now introduces the dental lavatory.

This illustration shows the new attachment as it is found in the toilet rooms on the "Alton" trains. The water has the chill removed so as not to injure sensitive teeth; an automatic rinsing device cleanses the bowl in the most hygienic manner, and individual tumblers are also provided.

Every traveler who has experienced the disagreeable sensation of cleansing the teeth at the ordinary wash basin will instantly appreciate the new arrangement.

"THE ONLY WAY"

TO ST. LOUIS		TO KANSAS CITY	
Prairie State	9:00 A. M.	The Express	1:45 P. M.
Alton Limited	11:25 A. M.	The Hummer	6:30 P. M.
Palace Express	9:00 P. M.	Nightingale	10:30 P. M.
Midnight Special	11:43 P. M.		

TICKET OFFICES, RECTOR BUILDING, CLARK AND MONROE STREETS.

Telephone, Harrison 4470, Branch 21. Union Passenger Station, Telephone Main 2123.

C. R. DAVIDSON, Assistant General Passenger Agent, Chicago.

RAILWAY REVIEW, CHICAGO, MAR 13, 1909

The habits of the traveling public in relation to sanitary conditions and practices contrary to public hygiene have received more or less unfavorable comment from time to time in these columns. One of the usages most condemned by observers generally is that of brushing the teeth at the public lavatory in sleeping cars. It is in this respect that one of the railroads running west from Chicago is now advertising a real novelty. In the words of the advertisement: "Here is something new, an innovation never before conceived by any railroad—a dental lavatory. Not only did the Chicago & Alton run the first sleeping car, the first dining car and the first reclining chair car, but it now introduces the dental lavatory." The new attachment is a basin uniform in style with the other lavatory fittings, but only half as large, and located at the end of the wash bowls. The water has the chill removed so as not to injure sensitive teeth; an automatic rinsing device cleanses the bowl in the most thorough manner, and individual tumblers are also provided. The improvement speaks for itself, and the simplicity of it causes one to wonder why its appearance has been so long delayed.

—The New York Central Lines have definitely decided on the rolling stock which they will purchase this year. Seventy-one locomotives, 5450 freight cars and 203 passenger cars are to be purchased. Of this equipment contracts have already been awarded for 3350 freight cars distributed as follows: New York Central, 1000 self clearing steel hopper cars to the Standard Steel Car Co.; 1000 standard box cars, to the Merchants' Dispatch Co.; 200 stock cars, to the Haskell & Barker Co., Inc.; and 150 flat cars, to be built at the company's shops at West Albany; Lake Shore & Michigan Southern, 1000 self clearing steel hopper cars to the American Car & Foundry Co. Bids are being asked on 1000 box cars for the Lake Shore & Michigan Southern and the Michigan Central and 1000 flat cars for the New York Central. One hundred and thirty-five passenger cars have been ordered as follows: For the New York Central, 50 standard 70-ft. coaches, awarded to American Car & Foundry Co.; two vestibuled smokers, three dining cars, seven steel buffet cars and eleven steel postal cars, awarded to the Pullman Co., and 10 milk cars to be built at the company's West Albany shops. For the Lake Shore & Michigan Southern: 20 standard 70-ft. coaches, to the Pullman Co.; five standard coaches, to Barney & Smith; one dining car, two steel buffet cars, and three steel postal cars to the Pullman Co. For the Michigan Central, 11 standard 70-ft. coaches, to Barney & Smith; one dining car and two steel buffet cars, to the Pullman Co. For the Cleveland, Cincinnati, Chicago & St. Louis, one dining car, Pullman Co. For the Rutland Railroad, six milk cars, Osgood, Bradley & Co. The passenger cars still to be contracted for are as follows: New York Central, 36 steel baggage and express cars; Lake Shore & Michigan Southern, two cafe coaches; Michigan Central, three coaches with smoking compartments, two combination coach and baggage, 10 steel baggage and express, two combination baggage and mail, two combination baggage, mail and express cars; Cleveland, Cincinnati, Chicago & St. Louis, three combination coach and baggage, five steel baggage and express, and three combination baggage and mail. Specifications have been prepared but no orders placed for the 71 locomotives, which are to be distributed as follows: Lake Shore & Michigan Southern, 20 freight; Michigan Central, 12 passenger, 15 switch and 19 freight, one or more of which are to be decapods; Cleveland, Cincinnati, Chicago & St. Louis, five passenger.

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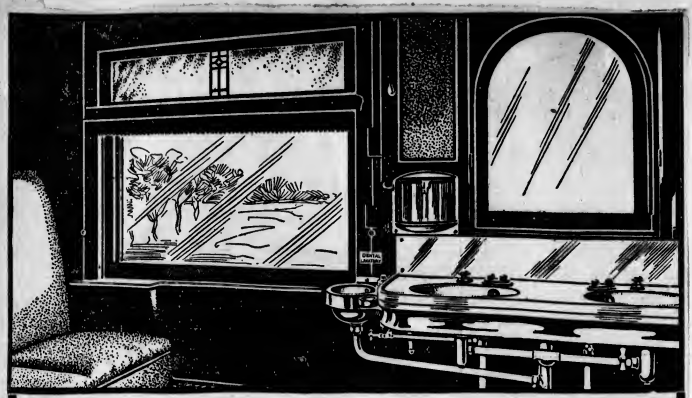

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is due to the fact that the paper is only wet on the treated side and passes over the dryer before it has a chance to become water-soaked.

With this same apparatus, by the addition of the Pease developer and the use of specially sensitized paper, a very fine quality of blue line prints can be made direct from the tracing without a negative, as fast as blueprints are made. These blue line prints—known as Pease direct white prints—are made on a very high grade of paper, giving them great strength and excellent wearing qualities. Absolute permanence is claimed for them, the strongest sunlight having no effect upon them, and there is practically no shrinkage. This work is especially valuable for profiles and progress charts and is being used to good advantage by auditing departments for tabulation work, which can be produced direct from typewritten copy on a special transparent paper.

A cutting and trimming table shown with this machine is also unique and should be of value in any blueprinting room. The cutting and trimming device at the end of the table is provided with a parallel clamp worked with a foot treadle which holds the paper or print securely while the revolving cutting knife, rotated positively by mechanical means not dependent upon friction against blade or paper, is used. This device trims paper very accurately and rapidly. This company also has other printing apparatus for use in smaller plants.

Labadie Vestibule Diaphragm Face Plate.

While cars are in motion, the slack running in and out at frequent intervals creates an aperture between the vestibule face plates, and on rough track or short curves the passenger, without realizing his danger, may grasp the inner edge of the face plate with thumb and fingers and

Coach Fitted with Labadie Plate.

frequently the fingers are crushed. The device here illustrated is intended to prevent such accidents. The improved face plate has a rabbetted edge or recess extending from within 6 in. of the platform to the curvature at the top of the face plate, the recess having a depth toward the outer edge of 4 in., the balance of the width, 1⅛ in., being left for dust and water closure. Each recess or rabbetted part has a depth of 1 in., making a space of 2 in. in which the passenger may place his fingers with safety. The object of this recess device is not only to save railway payments for personal injuries, but also to save the curtain devices. When the vestibule traps are closed and the trainmen cannot get within the vestibule to unhook the curtains and the cars are separated, the curtains are pulled apart until they break and are thus rendered inoperative.

The old face plates are utilized by being removed from the car, heated red hot so as to permit of being shaped by a bulldozer, and pressed between the formers which create the recess or rabbetted edge. By manufacturing a number at a time the cost is materially reduced. The expense of converting the old irons into the new device averages $3.50 per car. The process does not reduce the width of the original

Labadie Recessed Face Plate.

face plate, as the great pressure applied when creating the recess is sufficient to expand the metal enough to take care of the angle of the recess.

This device has been adopted by the Texas & Pacific and other southern roads. The illustrations show the improved diaphragm as applied to the car and a detail of the diaphragm. This device is patented by Victor Labadie, who is connected with the Texas & Pacific Ry. Address 181 Live Oak street, Dallas, Texas.

RAILWAY REVIEW.
CHICAGO SAT. MARCH 20 1909

Sleeping Car Rate Law in Kansas.

The lower house of the Kansas legislature has passed the Watson bill reducing sleeping car rates as follows: For a lower berth for a trip not exceeding 150 miles, $1; for a trip of more than 150 miles and not exceeding 300 miles, $1.50; for a trip of more than 300 miles and not exceeding 400 miles, $2. For an upper sleeper berth, a rate not to exceed three-fourths of the foregoing rate. The tourist sleeper rate is 75 per cent of the standard rates. For seats in parlor cars a rate of 25 cents a hundred miles is fixed. The penalty for violations is a fine from $100 to $1000 and from 30 days to six months in jail.

—The Chicago, Milwaukee & St. Paul, which has been reported previously as in the market for passenger equipment has advised us officially that its inquiry is for 25 combination baggage and mail cars, 15 passenger coaches, 10 sleeping cars and 5 diners. The report to the effect that the company is in the market for locomotives has been officially denied.

Lincoln's Springfield

There he lived and there his body lies entombed. Besides the interest which attaches to a visit to the grave, the Illinois State Capital contains Lincoln's old home and many other places of deep interest to visitors. If your ticket reads over the

Chicago & Alton Railroad

between Chicago and St. Louis, stop-over at Springfield can be arranged without additional charge. The time-tables are arranged so that passengers can spend a few hours in sight-seeing en route between Chicago, St. Louis and Kansas City. Take advantage of the above suggestion offered exclusively by the

"The Only Way"

Send for circular of information.

GEO. J. CHARLTON,
General Passenger Agent, Chicago.

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is due to the fact that the paper is only wet on the treated side and passes over the dryer before it has a chance to become water soaked.

With this same apparatus, by the addition of the Pease developer and the use of specially sensitized paper, a very fine quality of blue line prints can be made direct from the tracing without a negative, as fast as blueprints are made. These blue line prints—known as Pease direct white prints—are made on a very high grade of paper, giving them great strength and excellent scouring qualities. Absolute permanence is claimed for them, the strongest sunlight having no effect upon them, and there is practically no shrinkage. This work is especially valuable for profiles and progress charts and is being used to good advantage by auditing departments for tabulation work, which can be produced direct from typewritten copy on a special transparent paper.

A cutting and trimming table shown with this machine is also unique and should be of value in any blueprinting room. The cutting and trimming device at the end of the table is provided with a parallel clamp worked with a foot treadle which holds the paper or print securely while the revolving cutting knife, rotated positively by mechanical means not dependent upon friction against blade or paper, is used. This device trims paper very accurately and rapidly. This company also has other printing apparatus for use in smaller plants.

Labadie Vestibule Diaphragm Face Plate.

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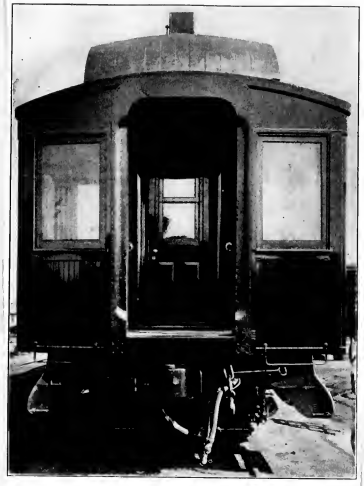

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RAILROAD AGE GAZETTE
NEW YORK, FRI., MAR. 26, 1909

The Kansas House has passed a bill to reduce sleeping car rates. It provides the following maximum rates: For a lower bertb for a trip not exceeding 150 miles, $1; for a trip of more than 150 miles and not exceeding 300 miles, $1.50; for a trip of more than 300 miles and not exceeding 400 miles, $2; for an upper berth, rates not to exceed three-fourths of the foregoing rates. The tourist sleeper rate would be 75 per cent. of the standard rates. For seats in parlor cars, a rate of 25 cents a hundred miles is fixed. The penalty for violation is a fine from $100 to $1,000 and from 30 days to six months in jail.

CAR BUILDING.

The Milwaukee Northern will soon be in the market for 4 interurban cars.

The Chicago & Milwaukee (Electric) is in the market for 12 pay-as-you-enter cars.

The Crow's Nest & Northern will be in the market this summer for a number of cars.

The Conestoga Traction Co., Lancaster, Pa., has ordered 18 interurban cars from the J. G. Brill Co.

The Atchison, Topeka & Santa Fe has ordered 9 baggage and 4 coaches from the Pullman Company.

RAILROAD AGE GAZETTE
FRI., APR. 2, 1909

Afternoon Tea on P. R. R. Pullman Cars.

The Pennsylvania Railroad now furnishes tea and coffee free to all passengers in Pullman parlor or sleeping cars at any hour of the day. The passengers will feel as English as though they were on an ocean steamer. This is the way the innovation strikes the Pittsburgh *Gazette-Times:*

"The most stupendous revolutions are those that come quietly. Thus unheralded came a little order issued to Pullman conductors of the Pennsylvania Railroad yesterday, decreeing that henceforth 'tea and coffee will be served in Pullman cars free of charge,' which service is to be performed by the porters, who 'shall not accept from passengers any gratuities therefor.' This means that the great corporation, the world's model railway, has joined the ranks of those who go about doing good. We should not be surprised to hear the announcement next that bridge tables will be installed, that the company will furnish cards and prizes, and that the porters are to keep the score. A box of caramels for every section is a logical sequence, and bunches of violets are next in order." * * *

The railway committees of the two houses of the Iowa legislature and G. S. Fernald, General Counsel of the Pullman Company, have entered into an agreement under which the Iowa legislature will not pass any law reducing the Pullman Company's rates in that state and the Pullman Company will make in return some substantial reductions. A bill has been pending in the legislature fixing a maximum berth rate in Iowa of $1.50 for a 10-hour trip; the present maximum rate is $2. Mr. Fernald has promised that his company within seven days will file with the Railroad Commission a schedule under which there will be reductions from $2 to $1.50 in all rates from the west bank of the Mississippi river to and including the following towns: Sanborn on the northern Iowa line of the St. Paul; Cherokee on the Illinois Central; Wall Lake on the North Western; Carroll on the North Western and the Great Western; Atlantic on the Rock Island, and Red Oak on the Burlington. The rate will be reduced from $2 to $1.50 from the east bank of the Missouri river up to and including the following towns: New Hampton on the North Iowa line of the St. Paul; Oelwein on the Great Western; Marion on the St. Paul; Cedar Rapids on the North Western; Iowa City on the Rock Island, and Ottumwa on the Burlington.

RAILWAY REVIEW
SAT. APR. 3 09

The Chicago, Milwaukee & St. Paul, reported in the *Railroad Age Gazette* of February 12 as asking prices on passenger equipment, has ordered 25 coaches, 10 sleepers and 4 dining cars from the Pullman Car Co.

The Spokane, Portland & Seattle has ordered 5 coaches, 3 combination passenger-smoking, 2 combination baggage-express, 1 combination mail-express and 2 observation buffet cars from the Pullman Car Co.

The Erie & Michigan Railway & Navigation Co., reported in the *Railroad Age Gazette* of December 18 as being in the market for 200 box cars, has not placed the order for that equipment and the matter is now being held in abeyance.

The Vandalia has ordered 205 freight cars for replacement account as follows: 52 hopper and 50 gondola cars from the Cambria Steel Co.; 72 box cars from the American Car & Foundry Co., and 31 stock cars from the Standard Steel Car Co.

The Salt Lake & Ogden (Electric), Salt Lake City, Utah, reported in the *Railroad Age Gazette* of December 25 as soon to be in the market for cars, expects to purchase twelve 56-ft. cars, six of which will be coaches and six combination passenger and baggage cars.

The Third Avenue Railroad, New York, was reported in the *Railroad Age Gazette* of December 18 as being in the market for 200 cars. These cars were ordered from the J. G. Brill Co., as were 75 additional cars just placed. The electrical equipments for these 75 cars were divided between the Westinghouse Manufacturing Co., which received 50, and the General Electric Co., which received 25 complete equipments.

The New York Central Lines, reported in the *Railroad Age Gazette* of March 12 as being in the market for passenger and freight equipment, has placed orders as follows:

New York Central & Hudson River:
20 steel baggage-express...American Car & Foundry Co.
16 steel baggage-express.....Standard Steel Car Co.
Michigan Central:
10 steel baggage-express .....Pullman Car Co.
Cleveland, Cincinnati, Chicago & St. Louis:
5 steel baggage-express.....Barney & Smith Car Co.

—The Chicago, Milwaukee & St. Paul has ordered 2 buffet, 10 mail and express cars and 15 coaches from the Barney & Smith Car Co. and 10 sleepers, 5 diners, 10 coaches and 15 baggage cars from the Pullman Co.

—The Michigan Central has ordered 10 combination steel baggage and express cars from the Pullman Co., and the Cleveland, Cincinnati, Chicago & St. Louis has ordered five similar cars from the Barney & Smith Car Co. The cars are for June and July delivery.

RAILROAD AGE GAZETTE
FRIDAY, APRIL 9, 1909

The Chicago, Milwaukee & St. Paul has ordered 67 passenger cars. As reported in the *Railroad Age Gazette* of April 2, 15 baggage, 10 sleeping, 10 coaches and 5 dining cars will be built by the Pullman Co. The remaining cars, including 15 coaches, 10 mail and express and 2 buffet cars, will be built by the Barney & Smith Car Co.

RAILWAY REVIEW
SAT., APRIL 10, 1909

—The Spokane, Portland & Seattle has ordered five coaches, two combination baggage and express cars, three combination passenger and smoking cars, two observation buffet cars and one combination mail and express car from the Pullman Co.

RAILROAD AGE GAZETTE
NEW YORK, FRI, AP. 16, 1909

RUSSIA TEACHING AMERICA.

St. Louis, April 9, 1909.

TO THE EDITOR OF THE RAILROAD AGE GAZETTE:

Have you noticed that the new minister of the Russian Imperial Railways has set out, disguised, on a six weeks' journey as a third-class passenger over the state railways? He intends to judge at first hand of the discomforts whereof the humble passengers complain, as well as look into other irregularities. Why should not American railway officers follow the example of this Russian minister? Either with or without disguise they could conduct a personal inspection of ordinary passenger train and station service to great advantage.

The officer would find even on the trains de luxe that the smoking compartment of the café car is often so densely filled with smoke that a veteran smoker is willing to exercise some self-denial rather than bathe in such an atmosphere. The kitchen and provision boxes on the dining cars will also bear some inspection, for in such contracted space it is difficult to handle and store large quantities of food in a cleanly manner and to obtain supplies which are always pure and fresh. On the larger lines there is some attempt to inspect the food, and especially milk, but the inspection is apt to be perfunctory and sporadic rather than systematic and continuous. On many lines the heating and ventilation of Pullman sleeping cars has been much improved during the past two years, thanks to good discipline, and they are not now overheated, or too cool, or too close. Why should not this now become the normal condition on all lines?

In the West, competition for passenger traffic has improved the manners and general attitude of the trainmen and agents toward the public, and there is now a noticeable contrast in this particular with conditions on some roads, particularly in the East, where there is no competition, and where railway men have bullied the public so long that it has become a part of their nature. It is in such localities that the officer-inspector incognito might do effective work. He would find that in addition to insolence some old agents are still ignorant of routes and trains, and are unable or unwilling to assist the passenger in determining the best route and proper train. He would find stations in good sized towns or small cities that are in too great contrast with those in larger cities. Many of them are dirty, dull and unsanitary, when with small expenditure they could be made clean and attractive. The average superintendent, who is usually the highest officer that inspects such stations, seems to be hardened to such conditions and does not notice the dingy walls hung with old circulars, time-tables and maps; and apparently few such officers insist that agents shall keep stations clean and neat. F. M.

FRI APR 23. 1909

The Missouri state assembly has passed a prohibition law for passenger trains, making it unlawful to drink or expose intoxicating liquors on passenger trains in the state or to ride on a passenger train in an intoxicated condition. The penalty is a fine of from $5 to $25.

Following the announcement of free tea on certain Pennsylvania fast trains, the Monon offers a box of candy to each lady patron of its dining cars. The Michigan Central began, some years ago, a free distribution of flowers at some of its stations to lady passengers. The New York Central has just established valet service on its Buffalo special, between Buffalo and New York, but it is not free. Presumably it will not cost as much in proportion as the whisk-broom valet service imposed by the porters.

—The Southern Railway has ordered 60 passenger coaches and three chair cars from the Pullman Co. It has also ordered 27 passenger cars from Barney & Smith Car Co. and 24 from the American Car & Foundry Co. The full order which is for 114 cars, is made up as follows: 85 coaches, 6 combination baggage and mail cars, 6 combination baggage and express cars, 6 postal cars, 2 diners and 3 chair cars.

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RAILROAD AGE GAZETTE
FRIDAY AP. 30. 1909.

The Southern, reported in the *Railroad Age Gazette* of March 19 and March 26 as asking prices on 114 passenger cars, has ordered 85 passenger coaches from the Pullman Co.; 6 baggage-express, 6 mail-baggage, 6 passenger-baggage and 6 postal cars from the American Car & Foundry Co.; 2 dining and 3 chair cars from the Barney & Smith Car Co.

RAILROAD AGE GAZETTE
N.Y. FRIDAY, MAY 7, 1909

The movement of passenger traffic to the Pacific coast on the low rate colonists' tickets which have been on sale for 60 days has been very large. The Chicago & North Western has had to add a large number of Pullman tourist sleeping cars to its regular equipment for the accommodation of this business, and about 100 Pullman standard and tourist sleeping cars will be in service on this line alone between Chicago and the coast for some time to come to carry transcontinental passengers. Other roads are also enjoying a large increase in this class of business.

RAILWAY REVIEW
CHICAGO, SAT., MAY 8, 1909

Cars and Locomotives.

—The Harriman Lines, which were reported in the Railway Review of November 28 as being in the market for 1500 30-ton refrigerator cars with steel underframes, has awarded the contract for these cars to the Pullman Co.

RAILROAD AGE GAZETTE, N.Y. FRI., MAY 14, 1909

The Atchison, Topeka & Santa Fe, as reported in the *Railroad Age Gazette* of March 26, has ordered nine baggage and four passenger coaches from the Pullman Co., for June delivery. The special equipment will include:

Bolsters, body	Commonwealth
Bolsters, truck	Steel
Brakes	Westinghouse
Brake-beams	Creco
Brake-shoes	National
Draft gear	Miner
Heating system	Chicago Car Heating Co.
Journal boxes	Symington
Lighting system	Pintsch
Springs	Simplex
Vestibules	Pullman
Wheels	Company standard

The Harriman Lines, reported in the *Railroad Age Gazette* of January 29 as being in the market for 1,500 refrigerator cars, have placed this order with the Pullman Co. for delivery about August 10. These cars will weigh 46,000 lbs. and have 60,000 lbs. capacity. They will be 33 ft. 2¾ in. long, 8 ft. 2¾ in. wide, 7 ft. 5⅞ in. high, inside measurements, and 40 ft. 11½ in. long, 9 ft. 6 in. wide and 12 ft. 11⅛ in. high, over all. The bodies will be of wood and the underframes of steel. The special equipment will include:

Axles	M. C. B. standard
Bolsters, body	M. C. B. standard
Bolsters, truck	Bettendorf
Brake-beams	Simplex
Brake-shoes	National hollow
Brasses	Am. Brake-Shoe & Fdry Co.
Couplers	Hewitt Mfg. Co.
Draft gear	National Mall. Castings Co.
Journal boxes	Miner
Side bearings	National Mall. Castings Co.
Springs	Miner gravity roller
Trucks	Railway Steel-Spring Co.
Wheels	Barber roller
	Cast-iron

The Ann Arbor has ordered one cafe-parlor car and two passenger coaches from the Pullman Co. for delivery June 15, 1909.

An officer of the Pullman Company says that during the year ended July 31, 1908, the number of passengers carried in standard Pullman sleeping cars was 18,603,067, and that only one of these was killed.

On all of the new coaches for the New York Central Lines, ordered recently from the Pullman Company, the American Car & Foundry Co. and the Barney & Smith Car Co., Edwards window design No. 7-D-2, made by the O. M. Edwards Co., Syracuse, N. Y., will be used on windows that have double sash, and design D-1 on all windows with single sash. These fixtures are to be furnished in statuary bronze finish to conform in color with the rest of the car fittings. Orders have also been received from the Slifiker Car Co. and from Rhodes, Curry & Co. for window fixtures for Canadian Northern Railway equipment.

A permit to operate in Texas was granted on May 7 by the Secretary of State to the Pullman Company, on the payment of a franchise tax of $10,000 and the execution of an affidavit that it is not a party to any trust. This is the first time that the Pullman Company has obtained a permit to operate in Texas, and, owing to past differences between it and state officials, proceedings are now pending against it to oust it from the state.

RAILWAY REVIEW
CHICAGO, SAT., MAY 15, 1909

Calling Sleepers for Breakfast.

Sleeping car passengers on the Illinois Central R. R. are no longer to be disturbed by calls to meals by dining car porters. Under a new rule they leave their call if they wish breakfast, the same as in a hotel, and the sleeping car conductor will see that they are awakened at the time desired. Two objects are in view: to save passengers from having their extra morning nap disturbed and to prevent a rush for the dining car. Another innovation is the advance distribution of menu cards. On these is specified the hour for being called, whether breakfast is wanted, and the time at which it is to be served.

Car & Foundry Co.

—The Pullman Co. is building two new erecting shops for its steel passenger car department, which will increase the capacity for passenger cars, steel and wood, to five cars a day. These buildings will each be 200x400 ft., with a turntable between them. They will be completed in 90 days. The Pullman Co. is also proceeding to erect at once two new large buildings for the building of steel freight cars. Additional buildings are a new brass foundry and brass finishing shop, an electric power house and an interior steel finishing plant. The completion of these additions will equip the company for any kind of car construction, with a thoroughly modern plant, which it is believed will not be surpassed anywhere.

—The Bettendorf Axle Co. has secured a contract from the Harriman Lines for 1500 of its single center sill underframes for the refrigerator cars which that road has ordered from the Pullman Co.

—The Pullman Co. has contracted with the Kenwood Bridge Co. for fabricating 1000 tons of material for its car shops.

—The Ann Arbor is reported to have ordered two passenger coaches and one cafe-parlor car from the Pullman Co.

FRIDAY, MAY 21, 09

AGE GAZETTE. Vol. XLVI., No. 21.

ENGLISH RAILWAYS.

BY WILLIAM WICKHAM TURLAY.

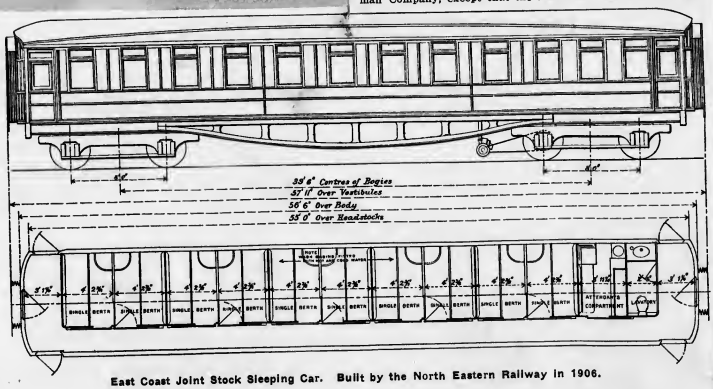
III.

SLEEPING CARS.

English sleeping cars are all built with corridors and compartments, each compartment usually accommodating one person only, as there are no upper berths, though two adjoining

Two-Berth Compartment in Sleeping Car.

compartments can sometimes be connected by doors arranged for the purpose. There are toilet rooms at the ends of the cars and in addition each compartment has a wash-basin with hot and cold water. These cars are quite like the "Mann" sleeping cars, a few of which were built and introduced in America some years ago and afterwards bought by the Pullman Company, except that the Mann cars had an upper and



East Coast Joint Stock Sleeping Car. Built by the North Eastern Railway in 1906.

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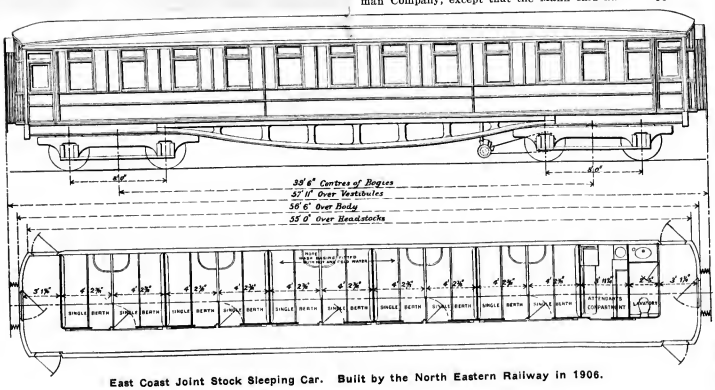

East Coast Joint Stock Sleeping Car. Built by the North Eastern Railway in 1906.

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a lower berth in each compartment. The English sleeping cars are so much superior to the ordinary American sleeping cars, both in comfort and decency that no comparison need be made, but it must be remembered that the American cars each contain one or more staterooms, which afford privacy at a considerable advance over the usual charge. The charge per passenger for a night journey in an English sleeping car ranges from five shillings ($1.20) to 7½ shillings ($1.80), according to distance, and the passenger must also have a first class ticket, so that the actual cost of the compartment

Interior of Third Class Dining Car.

in the English sleeper for a traveler who would ordinarily ride on a second or third class ticket is greater than that of a berth in an American sleeper. Those who are unable or unwilling to pay so much are provided for by the railway companies in another way, as there is a system by which travelers of any class may rent pillows and rugs at six pence (12c. each) per night and may thus make themselves fairly comfortable at a small expense, especially if the ordinary compartments are not crowded. For this purpose the second and third class cars are really preferable, as the seats are not separated by arms and one can make himself very comfortable if able to lie down at full length on the seat cushions with his rug and pillow.*

Luncheon Basket.

It may be added that sleeping and dining cars in England are owned and manager by the railway companies themselves.

DINING CARS AND LUNCHES.

English dining cars are usually subdivided for pasengers of different classes and are clean and comfortable, though the interior decorations, which vary somewhat according to the class of the compartment, are not as elaborate as in American dining cars. The meals are served in courses and are good. The usual prices are:

Breakfast, 2s. 6d. = 60 cents.
Luncheon, 2s. 6d. = 60 cents.
Dinner, 3s. 0d. to 3s. 6d. = 72 to 84 cents.

The dining car waiter seems contented with a tip of three pence (6 cents) in place of the 25 cents which his colored brother in America looks for.

Basket luncheons are furnished at all important stations and can be ordered in advance by wire, without extra charge, by notifying the train conductor (or "guard," as he is called) or the station officials, and will be delivered on the train at any one of certain designated stopping places, so that the passenger is enabled to choose his meal hour. The scale of prices is as follows:

6d. = 12 cents.—Pot of tea or coffee, with bread and butter.
1s. = 24 cents.—Pot of tea or coffee, with bread and butter, cake, jam and cress or lettuce
2s. = 48 cents.—Cold roast beef, salad, fruit, bread and butter and cheese.
2s. 6d. = 60 cents.—Hot roast meat—steak or chops—with vegetables (or one-half of a cold roast chicken, with ham or tongue, in place of the hot meat and vegetables, as desired), salad, ice (or fruit), bread and butter and cheese.

At an additional expense of sixpence (12 cents) a bottle of mineral water, ale or beer, or a small bottle of light wine will be added. The luncheons are packed in small partitioned wicker-work baskets or hampers, with covers, which contain also dishes, napkins, knives, forks and spoons, salt and pepper. These hampers may be left in the train or handed out to a porter at any stopping place. Between the dining cars and basket luncheons, besides the dining rooms and lunch counters at stations, the traveler has a considerable range of choice, and is enabled to consult both his appetite and his pocketbook. Like a good many other things which are done by English railway managers (whether from a wise policy of under pressure of public opinion) for the comfort of the ordinary traveler, the system of basket lunches must involve a good deal of troublesome detail, with little or no direct profit, and it may reduce the receipts of the dining cars. It was tried in a very small way on one of our New England railways some years ago, but discontinued, and it is not as easy or pleasant to eat in one of our open and often crowded American cars, under the observation of many people, as in the comparative privacy of a compartment.

(To be continued.)

*The Editor's experience is that the arms separating the first-class seats can be raised at will, removing all obstructions.

THE ARICA-LA PAZ RAILWAY.*

Arica is the seaport town of Tacna, Chile, and has a population of about 3,000 inhabitants, communication being maintained between it through its port, with Valparaiso in the extreme south, and with Panama in the north.

Having already connected Arica with Tacna by railway, a distance of 39 miles, the Chilian government have long cherished the ambition of extending the line to La Paz in Bolivia, while the Bolovian government have been equally anxious, by this means, to get an outlet to the sea.

The enterprise to build this line, which has now been resolved on, will provide some engineering features of the greatest interest, since it will be necessary to drive it through or over the great mountain chain of the Andes, which shuts off Chile from the Argentine Republic and Bolivia. The first step in the general scheme of railway building in this territory was the Antofagasta and Bolivia Railway. The second was a connection with the Argentine system through the great spiral tunnel now being driven under the Uspallata pass, which will be opened to traffic in May of next year, admitting of the passage over the first trans-continental railway line in South America from the Atlantic to the Pacific. The third step will be the crossing of the Andes at one of the low passes above Copiapó to connect with the Argentine lines from Tucumán with the Bolivian system. Surveys have already been authorized, and work has been commenced upon this project. The fourth, and by far the greatest, engineering undertaking will be the Arica-La Paz line, the construction of which will cost the agreed sum of £2,334,395 ($11,671,975).

The route will follow the Valley of Lluta from Arica to the Inn of Incara, a distance of 104 miles. This latter station will mark the highest elevation in the passage of the Andes, and will also form the crossing point for the proposed Tacna

*Abstract from an article in *The* (London) *Engineer*.

a lower berth in each compartment. The English sleeping cars are so much superior to the ordinary American sleeping cars, both in comfort and decency that no comparison need be made, but it must be remembered that the American cars each contain one or more staterooms, which afford privacy at a considerable advance over the usual charge. The charge per passenger for a night journey in an English sleeping car ranges from five shillings ($1.20) to 7½ shillings ($1.80), according to distance, and the passenger must also have a first class ticket, so that the actual cost of the compartment

Interior of Third Class Dining Car.

in the English sleeper for a traveler who would ordinarily ride on a second or third class ticket is greater than that of a berth in an American sleeper. Those who are unable or unwilling to pay so much are provided for by the railway companies in another way, as there is a system by which travelers of any class may rent pillows and rugs at six pence (12c. each) per night and may thus make themselves fairly comfortable at a small expense, especially if the ordinary compartments are not crowded. For this purpose the second and third class cars are really preferable, as the seats are not separated by arms and one can make himself very comfortable if able to lie down at full length on the seat cushions with his rug and pillow.*

Luncheon Basket.

It may be added that sleeping and dining cars in England are owned and manager by the railway companies themselves.

DINING CARS AND LUNCHES.

English dining cars are usually subdivided for pasengers of different classes and are clean and comfortable, though the interior decorations, which vary somewhat according to the class of the compartment, are not as elaborate as in American dining cars. The meals are served in courses and are good. The usual prices are:

Breakfast, 2s. 6d. = 60 cents.
Luncheon, 2s. 6d. = 60 cents.
Dinner, 3s. 6d. to 3s. 6d. = 72 to 84 cents.

The dining car waiter seems contented with a tip of three pence (6 cents) in place of the 25 cents which his colored brother in America looks for.

Basket luncheons are furnished at all important stations and can be ordered in advance by wire, without extra charge, by notifying the train conductor (or "guard," as he is called) or the station officials, and will be delivered on the train at any one of certain designated stopping places, so that the passenger is enabled to choose his meal hour. The scale of prices is as follows:

6d. = 12 cents.—Pot of tea or coffee, with bread and butter.
1s. = 24 cents.—Pot of tea or coffee, with bread and butter, cake, jam and cress or lettuce
2s. = 48 cents.—Cold roast beef, salad, fruit, bread and butter and cheese.
2s. 6d.= 60 cents.—Hot roast meat—steak or chops—with vegetables (or one-half of a cold roast chicken, with ham or tongue, in place of the hot meat and vegetables, as desired), salad, ice (or fruit), bread and butter and cheese.

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RAILWAY REVIEW
CHICAGO, SAT., JUNE 5, 1909

—The Chicago Railways Co., on June 4, awarded the contract to the Pullman Co. for the construction of 350 "pay-as-you-enter" type of street cars, for use on local routes and as part of the rehabilitation of the north and west side system of electric railways. The specifications were prepared with the co-operation of the Railways Co. and the Board of Supervising Engineers, and it is the general opinion of local authorities that the type of car decided upon will be the most modern and best adapted for the service required within the city of Chicago. This latest car differs from the former type, of which 600 were built by the Pullman Company, in that the over-all length dimension is decreased from 49 ft. 2 ins. to 46 ft., and the width from 8 ft. 9 ins. to 8 ft. 6 ins., with the same seating capacity and aisle space as in the former cars. These changes will reduce the weight and bulk of the car considerably and should be a great reform in the local street car situation, as the present huge types of "pay-as-you-enter" has been a great factor in adding to the congestion on Chicago thoroughfares and also in causing accidents. The specifications were compiled by Mr. John Z. Murphy, chief engineer of the Chicago Railways Company, and Mr. Wray Thorn, division engineer of the Board of Supervising Engineers, the general details of which are as follows:

Dimensions:

Length of car over corner posts	31 ft. 6 ins.
Length of car over crown pieces	45 ft.
Length of car over bumpers	46 ft.
Width of car over drip rails	8 ft. 4 ins.
Width of car over posts at belt rail	8 ft. 4 ½ ins.
Width of car over guard rail	8 ft. 6 ins.
Car to be drawn in at drip rails on each side	1 in.
Height, top of rail to top of trolley boards	11 ft. 8 ½ ins.
Distance between faces of posts	2 ft. 5 ¾ ins.
Truck centers	19 ft. 11 ins.
Diameter of wheels (Schoen steel)	34 ins.
Seating capacity	40
Weights:	
Approximate weight of car body	11 tons
Approximate weight of trucks	13 tons
Total weight, complete	24 tons

Equipment:

Motors	G. E.-216-A (four per car)
Controllers	G. E.-K-35-C.
Air brakes	National Brake & Electric Co.
Seats	Hale & Kilburn (type 99-A)
Curtains	Schroyer friction rollers
Heaters	Cross seat and panel type
Registers	International
Sanders	Keystone
Gong ringer	Keystone
Headlights	Crouse-Hinds type
Folding doors	Duner
Roofing	National Standard
Headlining	Argosote
Sash	Approved steel with Storm sash
Signal system	Consolidated Car Heating Co.'s buzzer system
Trucks	Baldwin type
Wheels	Schoen rolled steel
Ventilation	Taylor automatic system
Signs	Hunter illuminated
Trolley catchers	Wilson

RAILROAD AGE-GAZETTE, N.Y., FRI., JUNE 18, 1909

CAR BUILDING.

The Chicago & Alton is in the market for chair and baggage cars.

The Chicago & Northwestern has ordered 96 passenger cars from Pullman Co.

The decision of the circuit court at Little Rock in the case of Watson against the St. Louis, Iron Mountain & Southern, sustaining the federal employers' liability act, was reported in these columns June 11, page 1,227. Following is the syllabus prepared by the court:

1. *Powers of Congress Under Commerce Clause.*—Under the commerce clause of the Constitution, Congress has the power to regulate the relation of master and servant of carriers by rail engaged in interstate transporation, if limited to employees while engaged in interstate service.

2. *Obiter Dicta.*—General expressions in an opinion which are not essential to a disposition of the cause on points not presented nor argued to the court are *obiter*, and are not permitted to control the judgment of the courts in subsequent cases. But when a question is directly involved in the issues raised, was determined by the trial court, is assigned as error in the assignment of errors on appeal, argued by counsel for all parties, and distinctly decided by the appellate court a decision of such questions is not *obiter dictum*, although the cause is disposed of on other grounds, and this applies specially when the question involves the power of Congress to enact the legislation.

3. *Fifth Amendment.*—The fifth amendment to the United States Constitution applies only to privileges and immunities which arise out of the natural and essential character of the National Government or are specifically granted or secured to all citizens or persons by the Constitution of the United States. Those fundamental rights which are inherent in and belong to all who live in a free government are privileges and immunities of state citizenship only, and not within the protection of the fifth amendment.

4. *Same.*—A statute, although it indirectly works harm and loss to individuals, is not a taking of property without due process of law within the meaning of that amendment.

5. *Classification of Carriers.*—A statute abolishing the fellow-servant rule, and limited in its application to carriers by rail, is neither an arbitrary nor unreasonable classification.

6. *Employers' Liability Act of 1908.*—The employers' liability act of Congress of April 22, 1908, is a valid exercise of the powers granted to Congress by the commerce clause of the Constitution, as it is confined to common carriers by rail engaged in interstate commerce and employees while thus actually engaged. The fact that the act is not limited to injuries caused by the negligence of a fellow-servant who is at the time engaged in interstate employment does not make the act or that part of it abolishing the fellow-servant rule unconstitutional. . . .

Leave having been granted by Judge Trieber (who decided the case), Wade H. Ellis, Assistant to the Attorney General of the United States, filed a brief on the constitutionality of the act.

RAILWAY REVIEW, CHICAGO, SAT., JULY 10, 09

—The report to the effect that the Harriman lines had ordered 184 passenger cars from the Pullman Co., which was published in our issue of July 3, has been confirmed. The types of cars have not been decided on as yet.

—The Atchison, Topeka & Santa Fe, which was reported in last week's issue as being in the market for a number of passenger cars, has ordered 120 cars as follows: [illegible] postal and 40 combination cars, from the [illegible]an Car & Foundry Co.; from the Pullman [illegible] composite, 1 observation, 4 diners, 10 [illegible] coaches, 28 chair cars, and 3 "black [illegible]e," i. e., with separate accommodations f[illegible]s and whites.

RAILROAD AGE GAZETTE
NEW YORK, FRIDAY, JUNE 11, 1909

COURT NEWS.

Judge Trieber, of the Federal court, rendered a decision at Little Rock, Ark., on June 5 in the case of Watson v. the St. Louis, Iron Mountain & Southern sustaining the constitutionality of the employers' liability act, passed by Congress in 1908.

RAILWAY REVIEW
CHICAGO, SAT., JUNE 12, 1909

EQUIPMENT AND STRUCTURES

Cars and Locomotives.

—The Chicago & Northwestern has ordered 96 passenger cars from the Pullman Co.

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RAILWAY REVIEW, CHICAGO, SAT., JULY 3, 1909

Decisions of Interstate Commerce Commission on Question of Discrimination Against Colored Passengers.

The Interstate Commerce Commission handed down a decision in the case of the five bishops of the African Methodist Episcopal church in which case it was alleged that the southern roads in general discriminated against negro passengers. The Commission made an exhaustive investigation and gave extended hearings. It developed the fact that it is not the policy of southern carriers or the Pullman company to discriminate against negro passengers and in its opinion handed down it was held that "discrimination or prejudice has not been shown," and ordered the dismissal of the complaint. The complaint set for three separate particulars in which, it is alleged, the defendants discriminate against colored passengers, these being that "the character and condition of the passenger coaches furnished negro passengers are not equal to the accommodations provided for white travelers; that descendants of the African race are denied sleeping car accommodations by the defendants either by refusing to sell to negroes tickets for such accommodations or by denying negroes holding such tickets the right to occupy and use the space called for by such tickets, and that defendants refuse passengers of the African race access to dining cars and refuse to furnish such passengers food and refreshments solely because of their race and color." In the opinion handed down the Commission says that the first charge concerning ordinary passenger coaches was so completely disproved by the evidence that it was abandoned. "Indeed," says the Commission, "a careful examination of the evidence justifies a further exonera-

July 3, 1909. THE

tion of the defendants in this regard; for it shows that not only are the day coach accommodations offered colored passengers equal to those furnished white travelers, but that in most cases, actually the same equipment is used for colored and therefore white passengers, and considering the relative proportions of white and colored passengers, more space is provided the colored than the white traveler." The Commission also directs attention to the laws of the various southern states, which require segregation of the negro travelers and of the obligation resting on the carriers to obey these laws on pain of fines. Figures accompanying the opinion of the Commission show the relatively small number of negro passengers. During a period of eight days during which the Seaboard Air Line made an actual count of Pullman passengers there were 5268 white and 33 colored passengers, or less than two-thirds of 1 per cent; over the Southern Ry. the average proportion of negro to white passengers without regard to Pullman or day coaches between Washington and Atlanta was stated to be one in a thousand or one-tenth of 1 per cent.

RAILROAD AGE GAZETTE N.Y. FRIDAY, JULY 2, 1909

CAR BUILDING.

The Great Northern is in the market for 1,000 box cars.

The Reading has ordered 500 steel cars from the Standard Steel Car Co.

The Harriman Lines have ordered 184 passenger cars from the Pullman Co.

The International Sleeping-Car Co., whose headquarters are in Brussels, in 1908 had 1,147 passenger cars and 178 baggage cars. It had repair shops in Calais, Rouen, Irun (Spain), Ostend, Vienna, Berlin, Moscow and St. Petersburg, and at the close of the year finished one in Munich, and its building shops in Milan and St. Denis (a suburb of Paris). It owns hotels and buffets valued at about $700,000. The earnings were about 10 per cent. more than in 1907. A contract was concluded with the Russian State Railroads for the entire sleeping and dining car service running for 12 years. This includes limited trains over the Siberia Railroad. The contract for the Orient express, a limited train between Paris and Constantinople, was renewed for 15 years.

RAILWAY REVIEW, CHICAGO, SAT., JULY 3, 1909

EQUIPMENT AND STRUCTURES.

Cars and Locomotives.

—The Chicago, Burlington & Quincy is asking for prices on 500 refrigerator cars. This road has not ordered the ten tank cars on which it asked prices last March.

—The Atchison, Topeka & Santa Fe is reported to be in the market for 140 passenger cars.

—The Baltimore & Ohio has issued inquiries and specifications for 45 sixty-foot passenger cars and 6 sixty-foot combination passenger and baggage cars.

—The Houston, Fostoria & Northern is reported to have ordered 75 logging cars from the American Car & Foundry Co.

—The Hocking Valley will build 73 box cars at its shops to fill up missing numbers. The cars will be equipped with the Ralston Steel Car Co.'s steel underframe.

—The Harriman Lines, which have been reported in previous issues of the Railway Review as being in the market for passenger cars, are said to have ordered 184 cars from the Pullman Co.

RAILROAD AGE GAZETTE NEW YORK, FRIDAY, JULY 16, 1909

The Alabama Great Southern has ordered 10 passenger coaches from the Pullman Company.

The Panama Railroad is asking bids until July 26 for 6 passenger coaches. (Circular P-232.)

The Chesapeake & Ohio has ordered 1,000 all-steel hopper cars from the American Car & Foundry Co.

The Odessa & Keystone, Odessa, Fla., will soon be in the market for several coaches and also a combination passenger car.

The Harriman Lines have ordered 21 dining cars, 9 observation, 9 combination, 15 chair, 60 coaches, 50 baggage, 14 sixty-ft. postals and 6 forty-ft. postals, from the Pullman Co., as noted in the *Railroad Age Gazette* of July 2. The first three lots are to be delivered between October and December and deliveries of the rest are to begin in November. The diners will be 72 ft. 6 in. long, 10 ft. ⅜ in. wide, 15 ft. 1⅞ in. high, bodies of wood, underframes of steel, weight 125,000 lbs., and to have a capacity of 30 passengers. The observation cars have the same dimensions except as to height, which will be 14 ft. 11½ in. Their weight will be 120,000 lbs. and the capacity 40. The combination cars will be 69 ft. long, 10 ft. ⅜ in. wide and 14 ft. 1⅞ in. high. The chair cars will be 59 ft. 10 in. long, 9 ft. 9⅝ in. wide and 14 ft. high; weight, 94,000 lbs., and capacity, 60. The coaches will have the same dimensions and weight, but the seating capacity is 72. The baggage cars will be 60 ft. 1½ in. long, 9 ft. 9⅝ in. wide and 14 ft. high; will be all-steel, and weigh 90,000 lbs. The 60-ft. postal cars have the same dimensions as the baggage and will weigh 108,000 lbs. The 40-ft. postals will be 40 ft. 1 in. long, with the same width and height as the other postals. Their weight will be 77,000 lbs. The special equipment is the same for all.

Axles	M. C. B.
Bolsters, body and truck	Commonwealth
Brake-beams	Chicago Railway Equipment Co.
Brake-shoes	American Brake Shoe & Foundry Co.
Brasses	Hewitt
Couplers	Janney
Draft gear	Session's Friction
Heating system—vapor	Chicago Car Heating Co.
Journal boxes	National Malleable Castings Co.
Lighting system	Pintsch gas
Platforms	Standard Coupler Co.
Seats	S. Karpen & Bros.
Side bearings	W. H. Miner Co.
Springs	Railway Steel Spring Co.
Trucks	Double Body Bolster Co.
Ventilators	Globe
Vestibules	Pullman
Vestibule diaphragms	Acme
Vestibule trap doors	O. M. Edwards Co.
Wheels	Rolled steel

Of the combination cars eight have baggage and mail apartments, 30 ft. being in the mail apartment. The other one has 15 ft. for mail, 20 ft. for baggage and 34 ft. for passengers. The chair cars and coaches have General Railway Supply Co. vestibule trap doors instead of those listed above. The baggage and postal cars have Forsyth platforms.

Contributed Papers.

AN INTERESTING DRIVING AXLE FAILURE.*

The failure of the locomotive driving axle reported herewith is interesting and somewhat unusual, being a case of an axle failing because of a crack developing internally, and probably also instructive as showing some of the precautions that seem to be necessary in selecting billets from which axles are made. It was a crank axle of a balanced compound Atlantic type engine with an original diameter of 9½ in. The axle was applied at the West Burlington shops, Chicago, Burlington & Quincy, May 25, 1906, and broke while engine 2,706 was hauling a passenger train on July 29, 1907. The break occurred in the middle of the journal under the left driving box. Fig. 1 is from a photograph of the fractured surface,

Fig. 1—Fractured Surface of Broken Axle.

Fig. 2—Etching of Section Near Fractured Surface.

from which it will be noted that the old crack existed very largely inside of the axle; and it would seem not improbable from the looks of the fracture that the crack first started inside, continuing both outward and inward, although the point of the beginning of the fracture seems to be uncertain. An analysis of borings taken near the point of fracture at the outside of the axle showed the following results:

Carbon	0.53 per cent.
Phosphorus	0.036 "
Sulphur	0.011 "
Manganese	0.43 "

This analysis is normal for driving-axle steel, although perhaps the carbon is a trifle high. An etching of the section near the point of fracture is shown in Fig. 2. This shows sound material, with no indication of piping, but the center portion is seen to consist of very large crystals, some of them ¼ to ⅝ in. long. This would seem to indicate that the billet was rolled from the ingot before the steel had a chance to solidify in the center, leaving the process of crystal formation to go on even after the work of rolling the billet had been finished. The figure shows definitely that later, when the billet was forged into an axle at West Burlington, the work of forging affected the metal to only a short distance, averaging not much over one inch from the outside. We had intended making a full examination of the main portion of the axle, but unfortunately this had been scrapped by the time we finally decided to make this examination. It seems evident that in forging there was a rectangular core that was but little affected by the hammer, which left severe forging strains, which latter resulted in the internal crack. Fig. 1 shows this crack to have a roughly rectangular shape, indicating the location of the strains.

It has frequently been urged that in buying billets for forgings, it is only important to know that the chemical composition of the material is satisfactory and that the process of forging afterward furnished the necessary work to produce suitable physical properties in the finished forging, and the author has been somewhat partial to this view. This experience, however, seems to show fairly definitely that it is important to have the necessary physical qualities in the billet before the forging is made and it would seem advisable, therefore, to make physical tests of the billets, obtaining the test piece by means of a hollow drill or otherwise.

*From a paper presented by M. H. Wickhorst, Engineer of Tests, C., B. & Q., at a meeting of the American Society for Testing Materials, Atlantic City, N. J., June 30, 1909.

NEW PULLMAN TRAIN-DE-LUXE, LONDON, BRIGHTON & SOUTH COAST.

The accompanying photographs are of a Pullman train, the "Southern Belle," which the London, Brighton & South Coast put into service on November 1, 1908, between London and Brighton. The great success of the Sunday Pullman Limited train since its inauguration in October, 1908, the completion of the new Victoria station, the widening of the line as far as Three Bridges and an improving Brighton traffic have induced the directors of the London, Brighton & South Coast to run daily this most luxurious Pullman car train between Victoria and Brighton. The train makes the trip in each direction in 60 minutes.

The train consists of seven Pullman cars, vestibuled throughout, and provides seating accommodation for 219 persons. It comprises a buffet car and six parlor cars, two of the latter having the guards' compartments. Each car measures 63 ft. 10 in. long, 8 ft. 8¾ in. wide and 13 ft. 6 in. high from rail to top of roof. Each is fitted with an independent hot-water heating apparatus and a complete installation of electric bells, also with Stone's improved systems of electric lighting and ventila-

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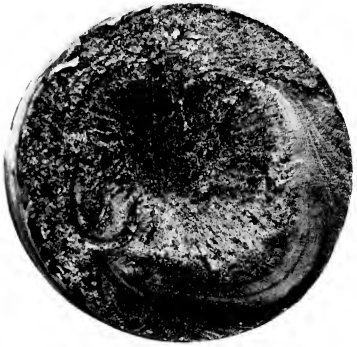

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The train consists of seven Pullman cars, vestibuled throughout, and provides seating accommodation for 219 persons. It comprises a buffet car and six parlor cars, two of the latter having the guards' compartments. Each car measures 63 ft. 10 in. long, 8 ft. 8¾ in. wide and 13 ft. 6 in. high from rail to top of roof. Each is fitted with an independent hot-water heating apparatus and a complete installation of electric bells, also with Stone's improved systems of electric lighting and ventila-

Volume 23 Insert p59

decorated in the same style as the Bessborough car. The groundwork is also in mahogany, but in this case the panels are composed of a rich plum-pudding mahogany. No other name is known for this beautiful wood which has received its cognomen because of its curious plum-like markings. The

En Route to Brighton, Nov. 1, 1908.

The Parlor Car Princess Helen.

panels in this case are banded with kingwood, which is a striped wood of a purple color. The pilasters, friezes, mouldings, etc., are all richly and tastefully inlaid. The carpets, blinds, and other accessories are the same as in the Bess-

In the Station at Victoria.

borough car. The seats and easy chairs are upholstered in a dainty green and drab-striped moquette tapestry.

The parlor car Belgravia will seat 33 persons. It is paneled with richly marked pear tree with holly inlay, and is treated in the Pergolesi style, the main features being the beautifully inlaid panels of festoons, draperies and flowers, the general effect being that of ivory on the rich browny-pink wood. The frieze moldings, etc., are all inlaid. The sofas and chairs in this car are upholstered in a fine blue piqué velvet. The blinds are of rich damask of the same color, and the pile carpets are of rich shades of deep rose in self color.

The Alberta car and the Verona car will accommodate 31 persons each, and being finished in oak called for a treatment different from that of the cars already described, and the style of the French Renaissance has been introduced with highly satisfactory results. The wood is of the finest procurable wainscot oak beautifully figured, and is inlaid with rich decorative panels, moldings, pilasters, and friezes of hollywood slightly shaded to give the feeling of bas-relief. The ceilings, wall brackets, basket racks, and door mountings have all been specially designed and modeled, in order to retain purity of style. The easy chairs and sofa coverings are of a fine Mohair velvet of a light café color. The carpets and blinds are in shades of green with self colored designs.

The seven cars comprising the train were built by the Metropolitan Amalgamated Railway Carriage & Wagon Co., Ltd., Saltley, Birmingham. The entire scheme of decorations was designed by G. F. Milne, and carried out by Messrs. W. S. Laycock, Limited, Victoria Works, Sheffield. The whole of the equipment of the train has been under the direct supervision of Thomas Powell, Secretary and Manager of the Pullman Car Company.

ANNUAL MEETING OF THE FREIGHT CLAIM ASSOCIATION.

The eighteenth annual session of the Freight Claim Association was held at Old Point Comfort, Va., June 17, 18 and 19, President D. Mowat (T., P. & W.) in the chair. About 200 members were present (out of a total membership of 354), the largest attendance in the history of the association.

Seven Car Pullman Train, "Southern Belle," London, Brighton & South Coast.

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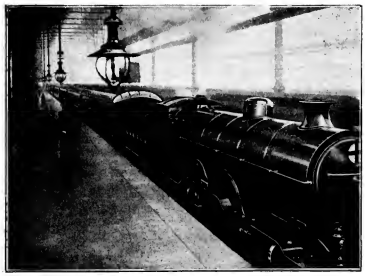

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Seven Car Pullman Train. "Southern Belle." London, Brighton & South Coast.

RAILROAD AGE GAZETTE
N.Y. FRI. JULY. 30. 09

The New York, New Haven & Hartford is said to have ordered passenger cars for a train-de-luxe from the Pullman Company. This item is not confirmed.

RAILWAY REVIEW
SAT. JULY. 31. 09

—It is reported that the Chicago Railways Co. has placed an order for 350 street cars from the Pullman Co., in addition to the order placed about one month ago.

RAILROAD AGE GAZETTE
NEW YORK, FRI., AUG. 6, 1909

The Chicago & North Western is said to have ordered the 1,500 steel underframe gondolas mentioned in the *Railroad Age Gazette* of July 23 from the Pullman Company. This report cannot be confirmed.

The Northern Pacific, reported in the *Railroad Age Gazette* of July 16 as having ordered 1,000 forty-ton box cars from the Pullman Co., has increased this order to 1,800. The order for 200 cars from the Seattle Car Co. makes the 2,000 total originally mentioned.

RAILWAY REVIEW
CHICAGO, SAT., AUG. 28, 1909

Foundry Co.

—The equipment orders placed by the Chicago & Northwestern since January 1 aggregate 125 locomotives, 125 passenger cars and 7900 freight cars. The passenger car order previously reported as placed with the Pullman Co., amounting to 96 cars, has been increased under option and now consists of 40 coaches, 20 reclining chair cars, 15 smokers, 12 parlor cars, 5 dining cars, 16 postal cars and 17 baggage cars, all of which are to be of steel construction. Of the freight equipment 4000 box cars were awarded to the Haskell & Barker Car Co., who also took the orders for 600 refrigerator cars, 500 ore cars and 300 stock cars; 2500 gondolas were awarded to the American Car & Foundry Co.

—The Northern Pacific has announced that its new equipment, upon which the builders have been exerting every effort toward quick delivery, will be received in the near future, the first consignment of cars starting on August 24 from the Pullman shops. There will be 16 standard sleeping cars delivered in the next few days, and these will immediately be placed in service on the North Coast Limited trains. Of this equipment eight of the cars will contain 14 sections and one drawing room, and eight cars will contain 10 sections, two state rooms and one drawing room. Every device for the comfort and convenience of passengers will be provided in these sleeping cars, including electric lights, fans, patent ventilators, dental lavatories and large and commodious toilet rooms. The Northern Pacific recently received 13 new locomotives from the Baldwin Locomotive Works and 17 more are ordered. They are all of the Pacific passenger type and those received have been assigned to passenger service on the various divisions. The combined weight of each engine, with its loaded tender, is 376,900 lbs., the tenders having a capacity of 12 tons of coal and 7000 gals. of water. The engines have a 22x26 in. cylinder and 69 in. drivers, and they carry 200 lbs. working pressure of steam. They are equipped with the latest improved Westinghouse high speed brakes. They are capable of an average speed of 60 miles per hour with a train of eight cars.

Iron and Steel

RAILROAD AGE GAZETTE.
NEW YORK FRIDAY, MARCH 19. 1909.

The Pullman Company.

The total revenue of the Pullman Co. for the fiscal year ended June 31, 1908, amounted to $31,620,241 as compared with $32,186,013 in 1907. The total expenses of operation were $18,001,759 in 1908, and $17,388,741 in 1907. There was $3,362,238 charged for depreciation of cars and other property of the company in 1908 as against $2,421,597 in 1907. Dividends of $7,998,356 were declared last year, and $7,476,878 in the previous year. There was a net surplus of $1,790,568 for 1908, and $4,149,455 in 1907.

No balance sheet is given as of July 31, 1907, but the balance sheet as of July 31, 1908, shows cash on hand of $9,054,320, and sundry accounts receivable of $3,074,343. There is carried as a liability reserve for depreciation and adjustment accounts $5,509,025, and there are sundry accounts payable of $1,617,875.

RAILROAD AGE GAZETTE
N.Y. FRI., JUNE 25, 1909

Letters to the Editor.

ENGLISH RAILWAYS.

Yeadon, Pa., May 25, 1909.

TO THE EDITOR OF THE RAILROAD AGE GAZETTE:

In reading Mr. Turlay's article on English railways, in your issue of May 21, I was glad to notice your footnote in regard to the arms of seats in first-class carriages, and would say that my own experience, although of a number of years ago, fully confirms it. During two different visits to Europe I did all my traveling in first-class carriages, and cannot now recall a single instance in which I found the seat arms fastened rigidly. I recall riding from Mallow Junction to Dublin on the night express and raising these arms to enable me to use the seat as a bed, and in the book published by the London & North-Western Railway, in 1876, to which I referred in my article of several months ago on "Short Fireboxes in Locomotives," a woodcut shows a compartment of a standard first-class passenger carriage of the company arranged for sleeping purposes at night, and in this cut the arms are raised, and cushions are also drawn from one seat across to the other at one door; the whole arrangement enabling three persons to lie at full length.

At the time of my visits, the L. & N-W. was probably the only line using its own sleepers, or "Saloon" carriages, as they were styled. The Midland; Great Northern; North British, and London, Brighton & South Coast railways all used Pullman cars of the standard American types, the last named line, I believe, running only parlor cars. Even the "Saloon" carriage of the L. & N.-W., as shown in the volume referred to, was much like the Pullman in its interior arrangements. I certainly agree with Mr. Turlay in commending the greater privacy of the present English sleeping carriages, and trust it may not be long until our Pullman cars which are in almost every other way built on lines of good taste and refinement, will also be so constructed as to afford every occupant of each car that degree of privacy which is so great an essential of every well-ordered life and is especially desirable for women, young girls or children who may be traveling unaccompanied.

C. H. CARUTHERS.

The Western Pacific, reported in the *Railroad Age Gazette* of May 14 as being in the market for passenger cars, has ordered 40 baggage cars from the American Car & Foundry Co., 60 passenger cars from the Pullman Co., and a number of dining and buffet cars from the Barney & Smith Car Co.

The Pullman Company is building for itself, for service on the Pennsylvania, 500 steel sleeping cars.

RAILROAD AGE GAZETTE (DAILY) ATLANTIC CITY, N.J.
JUNE 23, 1909

STEEL PASSENGER CAR DESIGN.

The majority of the passenger cars ordered this year are either all-steel or have steel underframes; and as this type of car construction is yet in the state of development, there is still much variation in the designs for different railways and by different builders. The most prominent and radical change from the ordinary designs for steel underframes as previously used, is seen in the more extensive use of cast steel. Commencing with the elementary detail, the end sill, it has extended to the double body bolster, then to the end platform, and has gradually consolidated all these in one complete casting, and, not stopping at this, the rear bolster, has extensions which are carried some distance back to receive the rolled steel sills. An illustration of this extensive use of cast steel for underframe ends will be seen in the detail of the new Jersey Central coaches which is illustrated on another page.

The heavy platforms, drawbars, draft rigging vestibule, as well as the inside equipment of the bar at the ends, balance a portion of central part beyond the bolsters, and a diagram of the bending moments for steel underframes of sleeping cars shows that splices can be safely used several feet back of the rear bolster. This has been an important factor in recent Pullman designs, and the new steel sleepers for the Pennsylvania Railroad will have the combined cast steel and rolled steel underframes with splices some distance back of the bolster. The heavy sections used in the large end casting make a very strong construction, but in spite of the extra weight of this portion the total weight of the new sleepers will be materially less than that of the first steel sleeper, the "Jamestown," which has been in regular service during the past year.

Many of the steel coaches already built have the side posts and carlines continuous and integral, and while this may be an ideal feature in the finished car, it is not convenient during the process of construction. It requires the men to work at a disadvantage with much of their material overhead, and the cost of labor is excessive. In the new designs the side posts and carlines are separate, and this permits the sides to be built without the interference of the roof material. The complete steel upper and lower deck can then be built independently on the shop floor and, when completed, can be hoisted bodily and placed in position on the posts.

Another change which is seen in recent Pullman practice dispenses with the continuous steel plate girder under the windows which has been used extensively in previous practice. The car side is stiffened by short diagonal angle iron braces and the outer finish is made up of the cellular metallic sheathing which was illustrated in the *Railroad Age Gazette*, May 15, 1908. This material supplies the desired insulating and fireproof qualities and takes care of the expansion, which, is a continuous plate, amounts to about ½ in. in extremes of temperature. The cellular feature of the sheathing provides air spaces between the inner and outer walls, making a good insulation against heat and cold, while there is not sufficient local expansion or contraction to cause the spreading of seams. This form of metallic siding also has some advantages in painting and maintenance. It is furnished with two priming coats of paint baked on, which makes it more durable, and when it is applied the car is immediately ready to receive the body color and varnish, thereby saving considerable time in the paint shop. When any small surface of this side finish is scratched or injured it can be more readily repaired and painted than a solid steel sheet.

The experience with large steel coaches has shown that improvement should be made in the fireproof and insulating materials used for inside finish and some new and better materials for this purpose are now available. The large order for Southern Pacific coaches is being filled with cars of their own design, with semi-elliptical roof and no upper deck, thus indicating that this form of construction can be made satisfactory for American practice. The principal difficulty with it has been the ventilators; and these have been so improved as to give satisfactory results.

RAILROAD AGE GAZETTE, NEW YORK
FRIDAY, JULY 9, 1909.

Discrimination Against Negroes.

Wesley J. Gaines et al. v. Seaboard Air Line et al. Opinion by Commissioner Cockrell:

Certain bishops of the African Methodist Episcopal Church alleged that the day coaches furnished for colored passengers in the southeastern states are not equal to those provided for white people; that negroes are denied sleeping-car accommodations, and are refused food in the dining cars solely on account of their race and color. The complaint with respect to the day coaches was abandoned in view of the great weight of the evidence to the contrary, and with respect to eating accommodations was materially modified by concession; most of the complainants and their witnesses testified that they do ride on the sleeping cars; that undue discrimination or prejudice has not been shown and that the complaint should be dismissed.

The Atchison, Topeka & Santa Fe, reported in the *Railroad Age Gazette* of July 2 as being in the market for passenger coaches, has ordered six coaches from the Pullman Company for August delivery.

On the Southern Railway coaches, contracts for which were recently let to the Barney & Smith Car Co. and the Pullman Company, the O. M. Edwards Co., Syracuse, N. Y., steel trap door and window fixtures will be used. The window fixtures are the latest design of No. 13 lock, and the trap doors are to be the all steel improved automatic.

RAILWAY REVIEW, CH'GO, SAT., JULY 24, 1909

A correspondent, who is a gentleman of high scientific ability and standing, writes us complaining of the insufficiency of passenger car lighting. His complaint is not based on an occasional experience, as he spends much time in travel. He ascribes the difficulty not to the kind of light, but to the quantity, bad distribution, and the dark colors of the interior finish of the cars. There are a number of excellent systems of illumination, both gas and electric. Some of them are almost above criticism. But it is evident that the best of them may be rendered very inefficient and unsatisfactory, by too great economy in number of lamps, bad location, and an interior finish of the car, in which the subject of light is quite commonly neglected. The work of an illuminating engineer, which includes not only the production of light but its efficiency, has its architectural side. Such ability and experience might well be called in by the designers of passenger coaches. The ceiling of a car may be brilliantly illuminated, while the passengers in the seats get very little benefit from it. In the toilet-rooms of sleeping cars it is often impossible to see to shave or even to part one's hair, because the light is not where it is needed. In many of the older sleeping cars and coaches, everything was sacrificed to a meretricious decoration. In later construction more attention has been been given to sanitation and comfort. The criticism regarding light, does not by any means apply to all cars and trains. But the testimony of such an impartial and competent observer as our correspondent, proves the average condition is not creditable. We believe that the large builders of passenger equipment should employ, in consulting capacity at least, a competent illuminating engineer, and that this subject should be handled in a really scientific manner.

RAILWAY REVIEW, CHICAGO, SATURDAY, JULY 17, 1909

—The Harriman Lines, as reported in various issues of the Railway Review, have ordered 184 passenger cars from the Pullman Co. and 4968 freight cars from the American Car & Foundry Co., the Standard Steel Car Co. and the Pressed Steel Car Co. The various details for these cars are as follows:

DINERS.

Number ordered	21
Division to roads: U. P., 7; O. R. & N., 2; So. Pac., 10; O. & C., 2.	
Body	Wood
Length over end sills	72 ft. 6 in.
Width	10 ft. ⅜ in.
Hight	15 ft. 1⅞ in.
Underframe	Steel
Weight	125,000 lbs.
Delivery	October to September
Special Equipment—	
Axles	M. C. B.
Bolsters (truck)	Commonwealth
Bolsters (body)	Commonwealth
Brakes	New York
Brake Beams	Chicago Ry. Equip. Co.
Brake Shoes	A. B. S. & F. Co.
Brasses	Hewitt
Couplers	Janney
Draft gears	Sessions Friction
Heating Sys.	Vapor-Chicago Car Heating Co.
Journal Boxes	National Malleable
Lighting Sys.	Pintsch Gas
Platforms	Standard Coupler Co.
Seats	S. Karpen & Bros.
Side Bearings	W. H. Miner
Springs	Ry. Steel Spring Co.
Trucks	Double Body Bolster Co.
Ventilators	Globe
Vestibules	Pullman
Vestibule Diaphragms	Acme
Vestibule trap doors	O. M. Edwards
Wheels	Rolled Steel

OBSERVATION CARS.

Number ordered	9
Division to roads: O. S. L., 2; Sou. Pac., 3; O. R. & N., 2; C. P., 2.	
Body	Wood
Capacity	40 people
Weight	120,000 lbs.
Length over end sills	72 ft. 6 in.
Width	10 ft. ⅜ in.
Hight	14 ft. 11½ in.
Delivery	October to September
Special equipment	Same as for diners

COMBINATION CARS.

Number ordered	9
Division to roads: O. S. L., 6; Ariz. & Colo., 1; O. R. & N., 2.	
Body	Wood
Length over end sills	69 ft.
Width	10 ft. ⅜ in.
Hight	14 ft. 1⅞ in.
Delivery	October to September
Special equipment	Same as for diners

Note—The 6 O. S. L. and 2 O. R. & N. cars are 69 ft. baggage and mail with 30 ft. mail apartments. The Arizona and Colorado car has 15 ft. mail, 20 ft. baggage and 34 ft. passenger apartments.

CHAIR CARS (STEEL).

Number ordered	15
Division to roads: Union Pacific	15
Length over end sills	59 ft. 10 in.
Width	9 ft. 9⅝ in.
Hight	14 ft.
Weight	94,000 lbs.
Capacity	60 people
Delivery	To begin in November
Special Equipment—	
Platforms	Forsyth
Seats	Hale & Kilburn Mfg. Co.
Vestibule trap doors	General Ry. Supply Co.
Other equipment same as for diners.	

COACHES (STEEL).

Number ordered	60
Division to roads: O. S. L., 15; Sou. Pac., 19; C. P., 15; O. R. & N., 6; O. & C., 5.	
Length over end sills	59 ft. 10 in.
Width	9 ft. 9⅝ in.
Hight	14 ft.
Weight	94,000 lbs.
Capacity	72 people
Delivery	Begin in November
Special Equipment—	
Platforms	Standard Coupler Co.
Other equipment same as for chair cars.	

BAGGAGE CARS (STEEL).

Number ordered	50
Division to roads: U. P., 20; O. R. & N., 4; O. S. L., 14; S. P., 6; O. & C., 2; C. P., 4.	
Delivery	To begin in November
Length over end sills	60 ft. 1½ in.
Width	9 ft. 9⅝ in.
Hight	14 ft.
Weight	90,000 lbs.
Special Equipment—	
Platforms	Forsyth
Other equipment same as for diners.	

SIXTY-FOOT POSTAL CARS (STEEL).

Number ordered	14
Division to roads: O. S. L., 6; S. P., 3; C. P., 5.	
Length over end sills	60 ft. 1½ in.
Width	9 ft. 9⅝ in.
Hight	14 ft.
Weight	103,000 lbs.
Special Equipment—	
Platforms	Forsyth
Other equipment same as for diners.	

FORTY-FOOT POSTAL CARS (STEEL).

Number ordered	6
Division to roads	U. P., 3; S. P., 3
Length over end sills	40 ft. 1 in.
Width	9 ft. 9⅝ in.
Hight	14 ft.
Weight	77,000 lbs.
Special equipment	Same as for 60-ft. postal cars

Steel Castings in Underframes.

The use of steel castings in the construction of steel passenger car underframes has developed very rapidly since the first steel motor car was built by the Pennsylvania R. R. Co. in 1902. This car was built at the Altoona shops of the railroad company for use in the New York city subway, and immediately following its completion designs were made for a 58-ft. passenger coach. This car was built in 1904 and had a steel underframe, body and sheathing up to the roof which was made of wood covered with copper, and containing altogether about 1500 lbs. of wood. Following these were a 60-ft. baggage car, a 70-ft. mail car, a 70-ft. dining car and a 70-ft. passenger coach the last of which was completed in 1907. These cars contained only a very little wood. Up to this time the underframes were made entirely of structural steel. The center sills, which were made in the form of built-up girder sections extended from buffer plate to buffer plate, contained pockets for the draft rigging. The bolsters and cross bearers were also made in built up sections. Practically all the cast steel used in the construction of the underframes of these cars were the center bearings, side bearings and the buffer beams which were bolted directly to the ends of the center sills.

The trucks for these cars were built as far as possible of structural steel, the use of steel castings being limited to the purpose of bracing, almost entirely.

In the same year the Union Pacific R. R. built a car designed by Mr. W. R. McKeen, Jr., the longitudinal sills of which were riveted to steel castings eleven feet long at either end of the car. This car was a radical departure from almost every detail of wooden car construction which steel car builders had so religiously copied in their steel car designs.

The recent design of the Pullman Company and of the Pennsylvania R. R., a description of which appeared in the RAILWAY AND ENGINEERING REVIEW of June 19, 1909, shows a marked tendency toward the use of steel castings, as far as possible, in the construction of the underframe. The castings at each end of the car, serving as body bolsters and center castings, support the entire end of the car and are riveted to the built-up girder center sill which forms the backbone of the construction. The crossbearers are also of cast steel.

The Central of New Jersey R. R. has recently built fifteen coaches, the underframing of which is notable for the amount of steel castings that are used in its construction. Like the Pullman Company's design referred to above, the entire end of the frame is made in the form of a steel casting, this casting forming the center casting, the body bolsters and the platform. The crossbearers are of the same material cast in one piece and extend under the center sill, which is of built-up girder sections, to the channel side sills. These crossbearers are four in number, two of which are cast with right angle extensions at each end, which serve as struts for the two truss rods.

This brief outline of the use of steel castings shows the rapidity with which they have been adapted to the construction of steel passenger car underframes, and points to the fact that they will probably be used to a greater extent in freight car construction in the future.

RAILROAD AGE GAZETTE, N.Y., JULY 23, 09

The Alabama Great Southern, reported in the *Railroad Age Gazette* of July 16 as having ordered 10 passenger coaches from the Pullman Company, has also ordered 3 steel underframe mail cars and 2 steel underframe baggage cars from the same company.

RAILWAY REVIEW. CH'GO. SAT. JULY 24, 1909

—The Pullman Company, Chicago, has declared a quarterly dividend of two dollars per share from net earnings to be paid August 16, 1909, to stockholders of record at close of business July 31, 1909.

—The Alabama Great Southern has ordered three mail cars and two baggage cars, both steel underframe, from the Pullman Co., in addition to the ten coaches reported last week.

—It is reported that new shops are to be built by the Pullman company at Denver, Colo. The plant now occupied under a lease from the Union Pacific, which expires in December of next year, will be vacated. It is supposed that the Union Pacific will then resume the use of the shops for making repairs and for which it was given up 14 years ago.

Complainant, desiring to travel from New Castle, Pa., to New York city via the Pennsylvania Co. to Pittsburg and the Pennsylvania R. R. from Pittsburg, presented a local ticket from New Castle to Pittsburg and a mileage book from Pittsburg to New York for the purpose of securing his berth in a Pullman car, but the agent refused to grant him the Pullman accommodations upon the ground that his regulation prohibited him from selling such accommodations except upon a through ticket, which in this case was greater than the combination of locals. Held, That under its tariff the Pullman Co. should have declined, as it did, to sell the through berth to the complainant. While these defendants are within their rights in maintaining their regulation in force in this case, such conditions as the one here developed can not be permanently permitted, as it is the almost invariable rule of this commission that the through charge must not exceed the combination of locals. Edward L. Suntz against Pennsylvania Co. and others. Prouty, commissioner.

—The Northern Pacific, which was reported in our issue of June 5 as being in the market for 1000 box cars, has ordered these cars from the Pullman Co.

—The Alabama Great Southern has ordered 10 passenger coaches from the Pullman Co.

RAILWAY REVIEW, CHICAGO, SAT., AUG. 7, 09

—The Northern Pacific has ordered 1800 wooden box cars from the Pullman Co. An order for 200 box cars, the balance of its requirements, was awarded to the Seattle Car Co., as reported in these columns July 24.

—The Pullman Co. has bought a considerable quantity of machine tool equipment for its new steel car shops which are to be built at once. A number of additional inquiries for machinery for the same purpose have been issued from time to time.

RAILROAD AGE GAZETTE N.Y., FRI., AUG. 13, 1909

The Atchison, Topeka & Santa Fe has ordered the following passenger equipment: Seven composite cars, buffet and baggage; 1 cafe observation, 4 diners, 10 postal, 10 smokers, 7 Jim Crow cars, 3 combination chair and smoking cars, 20 coaches and 28 chair cars. This is in addition to the 6 coaches and 50 baggage cars previously reported. The baggage and postal cars are to be built by the American Car & Foundry Co. and the rest by the Pullman Company.

Supply Trade News.

The Pullman Company, Chicago, is asking prices on structural steel for an addition to its plant. About 7,500 tons of steel will be required.

RAILROAD AGE GAZETTE N.Y., FRIDAY, AUG. 20, 1909

The Uncertainties of the Corporation Tax.

As the corporation tax now stands not only may the corporations cause no end of trouble by failing to make returns or failing to get them in proper form, or by making them inaccurate beyond the power of the bureau to rectify, but some of them will contest the law, and there is no knowing how much or how long its administration may be held up. Its constitutional validity, as well as its equity and its expediency, is seriously questioned, and it is sure to be put to a judicial test, the result of which will long be uncertain. In the meantime the economic authorities will be inquiring into it and perhaps bringing it into disrepute. There is to be a conference on state and local taxation at Louisville, Ky., next month, and there are several topics on the programme bearing on this tax, which trenches on one of the chief sources of state revenue. There is likely to be a demand from the International Tax Association, which is to hold this conference, for the repeal of the tax at the very next session of congress and before the trouble goes too far. The situation illustrates the unwisdom of precipitating legislative action on a subject of this kind. Public opinion had not been tested upon it. It had not been subject to discussion, and it was evident that a majority in both houses of congress were averse to it. It was practically forced into effect by being loaded upon the tariff bill and carried to enactment by it. Now the trouble of getting it into practical operation is to begin, with a pretty fair prospect that it will be thrown out either by repeal or judicial excision.—*The Journal of Commerce*, New York.

The Harriman Lines are in the market for 70 all-steel coaches, three dining cars and two observation cars. The order will probably be given to the Pullman Company as an increase of the order reported in the *Railroad Age Gazette* of July 16.

The Alabama Great Southern has ordered 10 coaches from the Pullman Company and 3 postal and 2 baggage cars from the American Car & Foundry Co., as previously reported in the *Railroad Age Gazette*. All the cars have wood bodies and steel underframes. The coaches are 66 ft. long and 9 ft. 8 in. wide, over sills, and have a seating capacity of 84. The baggage and postal cars are 60 ft. long and 9 ft. wide, inside measurements. The special equipment for all cars is as follows:

Axles	Open-hearth steel
Bolsters	Steel
Brakes	Westinghouse
Brake-beams	National Hollow
Brake-shoes	Am. Brake-Shoe & Fdry Co.
Brasses	M. C. B. lead lined, on coaches; Ajax, on baggage and postal
Couplers	Tiltnop S stem
Curtain fixtures	Curtain Supply Co., on coaches
Curtain material	Pantasote, on coaches
Draft gear	Miner tandem
Dust guards	Harrison
Heating system	Ward
Journal boxes	Franklin
Lighting system	Electric
Paint	Sherwin-Williams
Platforms	Steel (part of underframes)
Seat covering	Plush, on coaches
Side bearings	Woods
Springs	Railway Steel-Spring Co., on coaches Standard Steel Works, on others
Trucks	Commonwealth steel
Vestibules	Pullman standard on coaches
Vestibule diaphragms	Ajax canvas
Vestibule trap doors	Edwards, on coaches
Wheels	36-in. Standard Steel Works, rolled 3-in. tire
Window fixtures	Edwards on coaches.

The Chicago & North Western is about to order 50 passenger cars in addition to the 96 which were ordered from the Pullman Company two months ago.

Ralph W. Benson, engineer, Pullman Car Works, Chicago, has been appointed an assistant manager, sales department, of the Pullman Company, with office at Chicago, succeeding A. Twyman, retired.

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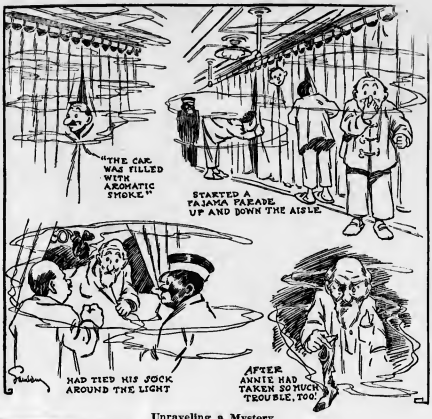
RAILWAY REVIEW
CHICAGO, SAT., AUG. 21, 1909


"THE CAR WAS FILLED WITH AROMATIC SMOKE."
STARTED A PAJAMA PARADE UP AND DOWN THE AISLE.
HAD TIED HIS SOCK AROUND THE LIGHT
AFTER ANNIE HAD TAKEN SO MUCH TROUBLE, TOO.

Unraveling a Mystery.

Yarn of a Sock.

One of the occupants of a sleeping car of the Rock Island road, bound into Denver, Colo., the other evening was a man of obviously rural extraction. In fact a straw hat two seasons old, a bunch of chin whiskers and other peculiarities of person and manner classed him as what is vulgarly termed a "hayseed." The Denver Republican is authority for this statement, and continues to give the further setting of a little drama of modern transportation.

The "hayseed" retired that evening earlier than anyone else. Yet the light in his berth remained burning for a long time as several passengers noticed. Finally it seemed to go out and the car became quiet. Just as everyone had secured a good start toward daybreak, some half wakeful one caught the scent of burning—burning and other odors intermingled. He peeked out from his curtains and discovered curls of aromatic smoke floating up and down the car. In an instant he was out in the aisle and sounded the alarm of fire. Every berth shot forth a head or two, and half the car took up the cry as the smoke became thicker and denser.

The porter appeared, but no blaze could be seen. Whereupon the men started a pajama parade up and down the aisle of the sleeper looking for a fire. After several bad guesses, which were met by startled feminine exclamations, one promenader pulled open the curtain of the berth occupied by the "hayseed." The mystery was explained. The incandescent light of the berth was still burning, and, wrapped tightly about it and tied by a piece of string, was a sock. An old, much darned and faded sock that looked like a fond memory of the farm. A woolen sock that smoked heavily, like a smudge pot and gave out the aromatic smoke. The rural individual was quietly sleeping, undisturbed by the incineration of the hosiery.

The explorer grabbed the "hayseed" by the shoulder and shook him out of at least a week's sleep. When the "hayseed" saw the burning sock he made a wild grab for it. "I have had that sock for almost two years," he said sadly, "and to think it would meet an end like this after Annie had taken so much trouble with it." "Why didn't you turn off your light?" he was asked. "I couldn't find out how to turn the durn thing off," he replied, with aggrieved tones. "I hain't never failed to turn out the gas before whenever I've been in town. But this thing hasn't got no handles nor nothing."

Our illustration, taken from the Denver Republican, was drawn by a staff artist of that paper from a description by an eye-witness.

—The Cleveland, Cincinnati, Chicago & St. Louis has ordered 5 baggage cars and 5 coaches from the Barney & Smith Car Co. and one diner from the Pullman Co.

RAILROAD AGE GAZETTE
N.Y., FRI., AUG. 27, 1909

The Chicago & North Western has added a new daily train to its service from Chicago to the Pacific coast. It is to be known as the "Oregon-Washington Limited" and will make the trip on the 3-day schedule now in use by the Chicago-Portland special. The equipment will include Pullman drawing room sleeping cars, Pullman tourist sleeping cars, Pullman private compartment and observation sleeping cars and free reclining chair cars, all of which will be handled between Chicago and Portland without change. The train made its first trip August 22, leaving Chicago at 11.30 a.m.

The Pullman Company has ordered 10,000 tons of structural steel from the Kenwood Bridge Co. for use in new shops.

[illegible] Milwaukee & St. Paul has ordered 250 tons of

The Chicago & North Western has ordered from the Pullman Co. 125 all-steel passenger cars as follows: Forty coaches, 20 reclining chair, 15 smoker, 12 parlor, 5 dining, 16 postal and 17 baggage cars. This is the first order placed by the Chicago & North Western for steel passenger equipment, and the new cars, when finished, will materially raise the standard of the through train service. This order includes the 96 cars mentioned in the *Railroad Age Gazette* of June 18.

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SAMUEL MORSE FELTON.

Samuel Morse Felton, president of the Mexican Central and chairman of the board of the Tennessee Central, has been elected president of the Chicago Great Western, effective September 1. The Great Western is in urgent need of physical reconstruction on a sound basis, and Mr. Felton's election indicates that it is the purpose of the new management to begin at once a thorough rehabilitation of the property.

Few railway officers have had and are still having so varied a career as that of Mr. Felton. Although still in middle life, he has nevertheless seen service on more than 15 different railways, and has been a general officer of ten of them. In an official life with so many changes one naturally looks to find the cause, and here they are not far to seek. He was educated as a civil engineer and at once entered railway service in this department. He became a chief engineer before he was at all concerned in any other department of railway work. The work of the engineer, as we all know, develops that habit of mind which takes into account certainties rather than probabilities and diplomacy. In Mr. Felton's early service as a general officer this habit was over-developed—it was undoubtedly a fault. He was impatient of diplomatic delays; he looked at the art of transportation structurally; he applied to its development the principles and methods of the science he had studied and knew well. His early methods as a general officer were quite comparable to those of the late James D. Layng, although they grew up from entirely different sources. Mr. Layng never hesitated to direct a shop foreman or master mechanic or trainmaster or traffic solicitor, or any similar minor officer, either verbally or by letter, in the details of his work, ignoring entirely the semi-military relation that exists and should exist between the head and the department officers all along down the line. So also would Mr. Felton frequently, and impatiently perhaps, ignore his heads of departments and issue orders direct to their subordinates without consultation. This was never within our knowledge ignorantly done. There was uniformly a fine result to be accomplished, but quite an unnecessary short circuiting. Mr. Felton has outgrown his earlier faults, which may or may not have caused some of his earlier changes in employment and service; nevertheless, he has always continued to be a direct-acting engine and is still somewhat impatient of slow forms of procedure. All these things, however, concern the manner rather than the substance of his work. His work of recent years might be called that of a railway physician. He has been much sought after as president in cases requiring drastic treatment. Always a student, with robust health which has enabled him to put no limit to the exercise of his faculties and his considerable store of railway knowledge, he has been called from one difficult problem to another until now he has to deal with a railway system built up by the perhaps greatest railway theorist and surely the most impracticable railway officer that this country has developed. He has trouble ahead of him, but the existence of this trouble is the reason for his invitation to attempt to solve the problem of making the Chicago Great Western Railway a useful member of society.

Samuel M. Felton.

Mr. Felton was born February 3, 1853, at Philadelphia, Pa. He was educated at the Massachusetts Institute of Technology and began railway work in August, 1868, as rodman for the Chester Creek Railroad, now a part of the Philadelphia, Baltimore & Washington. From 1870 to 1874 he was successively leveler and assistant engineer of the Lancaster Railroad, now a part of the New York, New Haven & Hartford; engineer in charge of surveys of the Chester & Paoli Railroad, and chief engineer of the Chester & Delaware River, now a part of the Philadelphia & Reading. In August, 1874, he was appointed general superintendent of the Pittsburgh, Cincinnati & St. Louis, and in September, 1881, his jurisdiction was extended over the Cincinnati & Muskingum Valley and the Little Miami, now a part of the Pittsburgh, Cincinnati, Chicago & St. Louis. In January, 1882, he was appointed general manager of the New York & New England, now a part of the New York, New Haven & Hartford, and in February, 1884, was made assistant to the president of the New York, Lake Erie & Western, now the Erie, in special charge of the New York, Pennsylvania & Ohio, and later was appointed general manager of the latter road, also now a part of the Erie. In January, 1885, he was elected vice-president of the New York, Lake Erie & Western, in charge of the traffic department, and in October of the same year his jurisdiction was extended over the operating department. From November, 1890, to March, 1892, he was president of the East Tennessee, Virginia & Georgia, now a part of the Southern Railway, and from 1890 to 1895 was president of the Alabama Great Southern also. In November, 1890, he was also elected president of the Cincinnati, New Orleans & Texas Pacific, and in March, 1893, when that road passed into a receivership, he was appointed receiver, severing his connection with the road in October, 1899, when the receivership was dissolved. He was elected president of the Chicago & Alton on September 7, 1899, which position he resigned November 26, 1907, to become president of the Mexican Central. He is a member of the American Society of Civil Engineers

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In Russia, according to a correspondent of the *Deseret News*, Salt Lake City, young women, educated as engineers, are now to be found at work directing operations on important new buildings and on masonry and other structures. At the St. Petersburg Technical College several hundred women have been studying during the past four years, and the first class has now been graduated. The women engineers of this first class to be graduated are said to give highly satisfactory service.

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RAILROAD AGE GAZETTE
N.Y., FRIDAY, SEPT. 3, 1909

The Northern Pacific has ordered 93 passenger cars from the Pullman Co.

The Fresno, Cal., Traction Company is in the market for 10 double truck cars.

The New Orleans & Northeastern is in the market for from 100 to 200 freight cars.

The Harriman Lines, reported in the *Railroad Age Gazette* of August 20 as being in the market for 75 all-steel coaches, 3 diners and 2 observation cars, have ordered this equipment from the Pullman Co. These cars are to be duplicates of those previously ordered, as reported in the *Railroad Age Gazette* of July 16.

RAILWAY REVIEW, CH'GO, SAT., SEP. 4, 09

The Railroad Commission of Nebraska is reported to have ruled that any passenger on any train may ride in Pullman cars without extra charge as long as no seat is vacant in the ordinary coaches.

—The Harriman lines, which were reported in our issue of August 28 as being in the market for two observation, three dining cars and 75 all-steel passenger coaches, has placed this order with the Pullman Co., as an addition to its previous order for passenger cars.

—The Great Northern is reported to have placed orders for a number of passenger cars with Barney & Smith Car Co.

—The Chicago & Northwestern has given out the following information, regarding the 125 new all-steel passenger cars which that road recently ordered from the Pullman Co. and which are now under construction: "All of these cars are fully equipped with non-collapsible, heavily reinforced steel frames, with the most modern safety vestibules, Westinghouse high speed air brake equipment, and the latest improved draft gear. The floors are laid with a sanitary composition that adds strength to the car and deadens the noise of the train. Even the frames of the seats are built of steel, and no combustible material enters into any part of the construction. The new dining cars will have features that are of direct interest to the public. Each car is arranged to seat thirty-six people, which is six more than the usual standard, and special improvements have been effected in the arrangement of the kitchen and pantry, which will insure greater capacity and more prompt service and at the same time remove all odors from the kitchen. The day coaches and reclining chair cars are to be 5 ft. longer than the largest cars heretofore used and will, in consequence, have greater seating capacity. The parlor cars will be of the most ample dimensions, and the interior fittings and finish will be in accordance with the usual luxurious Northwestern standard. Special attention has been given to the sanitary arrangement of all this equipment and it will all be fitted with the latest devices for insuring cleanliness and satisfactory ventilation. The Chicago & Northwestern will be the first western road to provide all-steel, safety, fireproof equipment on all of its through passenger trains."

RAILROAD AGE GAZETTE
NEW YORK, FRIDAY, OCT. 1, 1909

CAR BUILDING.

The Great Northern is in the market for 125 passenger cars.

The Chesapeake & Ohio is in the market for steel passenger cars.

The New York, Ontario & Western is in the market for eight passenger cars.

The Chicago, Milwaukee & St. Paul is asking bids on 178 passenger cars.

The Virginian Railway is in the market for eight passenger cars and about 10 cabooses.

The Chicago & Milwaukee Electric is in the market for 20 cars and one snow sweeper.

The Harriman Lines have ordered 815 fifty-ton, steel underframe, Hart convertible cars.

The Missouri Pacific has ordered 58 fifty-ton, steel underframe, Hart convertible cars.

The Birmingham Southern is in the market for 80 coke, 10 flat, 10 hopper and 10 box cars.

The Richmond, Fredericksburg & Potomac is in the market for three wooden passenger cars.

The Colorado & Southern has ordered 15 fifty-ton, steel underframe, Hart convertible cars.

The Indianapolis, New Castle & Toledo has ordered eight electric cars from the Jewett Car Co.

The Atchison, Topeka & Santa Fe has ordered 33 cabooses from the American Car & Foundry Co.

The Harriman Lines have ordered from the Pullman Co. 15 all-steel chair cars. The specifications will be the same as for those mentioned in the *Railroad Age Gazette* of July 16.

The Chicago, Burlington & Quincy has ordered 1,000 stock cars from the Mt. Vernon Car Co. as mentioned in the *Railroad Age Gazette* of September 10. Delivery is set for October and November. The cars are of 30 tons capacity, are all-wood, and have the following dimensions: Length, 36 ft. 1⅝ in.; width, 8 ft. 7⅜ in. inside; length, 37 ft. 9 in., and width, 9 ft. 4 in., over all.

N.Y. Fri., Oct. 1, 1909

boundary on the Southern Pacific of Mexico line, northward to Gleeson, Arizona, 42 miles.

The amount of money involved in this construction, placed conservatively at $100,000,000, is an unparalleled outlay for the construction of branches and improvements in the case of a system already so well intrenched. Of the above amount about one half has already been expended, while the recent sales of treasury securities, together with the surplus accumulated from operation during the past year, gave the Union Pacific further working capital in the neighborhood of $55,000,000. The cost of much of the above construction will not have to be met for another year, or even two, so that the Harriman lines are able to carry on their improvement program without the necessity of making further provision for funds.

NEW PASSENGER EQUIPMENT FOR THE ST. PAUL.

The Barney & Smith Car Company recently delivered to the Chicago, Milwaukee & St. Paul Railway some very handsome passenger cars for use on the Pioneer Limited, which embody a number of interesting features. This equipment consists of 10 baggage, mail and express cars, 15 day coaches and 2 buffet library cars. All these cars have steel frames and steel underframes. They are modern and up to date in every particular and the interior design and decorations are strikingly fine and original. In structural features, the three classes of cars are substantially the same, so that the description of the buffet library car given below will give a good general idea of the whole lot.

Elevation of New Library Car for the Pioneer Limited.

These buffet library cars are 72 ft. 6 in. long over end sills, 10 ft. wide over the frame, and are built with complete self-supporting steel underframes and steel frame work for the superstructure. The underframes are composed of built-up girder center sills and built-up side trusses in connection with the Commonwealth Steel Company's combined cast steel double body bolsters and platforms. The center construction consists of two $\frac{7}{16}$-in. web plates 30 in. deep at the central portion between the cross ties, tapering to 12 in. at the point of juncture with the bolsters, with four 3½-in. x 3½-in. x $\frac{5}{8}$-in. angles at the bottom of the webs, two 3½-in. x 3½-in. x $\frac{5}{8}$-in. angles at the top and one 24-in. x $\frac{5}{8}$-in. top cover plate. The side trusses consist of 24-in. x $\frac{7}{16}$-in. web plates with one 3-in. x 4-in. x $\frac{5}{8}$-in. angle at the top, one 3-in. x 4-in. x $\frac{5}{8}$-in. and one 3-in. x 3-in. x $\frac{7}{16}$-in. angle at the bottom. The top angle is placed on the inside of the web plate forming a foot rest. The $\frac{7}{16}$-in. angle is placed outside of the web plate and carries the wood railing strip to which the side sheathing is secured. The center construction is designed to resist the pulling and buffing shocks and to carry a proportion of the load, while the side trusses take care of the balance of the load.

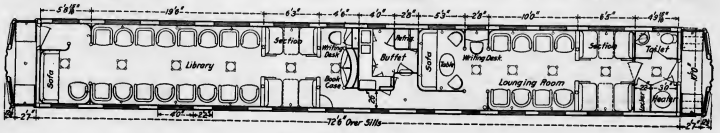
There are four Commonwealth Steel Co.'s cast steel cross ties and center filler castings per car, all 30 in. deep, the object being to equalize and distribute the load between the center construction and the side trusses. The floor supports between the cross ties are 4-in. channels.

The end framing and anti-telescoping device is composed of eight 4-in. "Z" bars at each end of the car, the lower ends extending down into pockets cast in the steel platform and riveted to the end sill sections. The upper end of each of these "Z" bars has the web cut out and the inner flange pressed back even with the outer flange, and both flanges are riveted to a pressed steel end plate, which in turn is securely connected to the side plates and roof framing of the car.

The side framing consists of $\frac{7}{16}$-in. pressed steel channel-shaped posts running from the side plates to the bottom of the side trusses. Each of these posts extends the full depth of the side truss and has a larger inner flange at this point, which provides an extremely large surface for securely riveting the post in position.

The side girths are composed of 3-in. x 3-in. x $\frac{7}{16}$-in. angles fitted and riveted between the pressed steel posts. The side plates, which are continuous, are of 3-in. x 3-in. x $\frac{5}{8}$-in. angles. The deck sills are continuous steel angles 4-in. x 4-in. x $\frac{7}{16}$-in. The deck plates are of $\frac{7}{16}$-in. pressed steel channel-shaped sections. The rafters, for both the upper and lower decks, are of angle section 2-in. x 1¼-in. x $\frac{7}{16}$-in., bent to shape and riveted directly to the deck sills and the deck plates, and secured to the side plates by malleable iron castings riveted to the lower deck rafter and the side plates.

Nailing strips are bolted to the side posts and the rafters for securing the outside sheathing, the roof, the inside finish and the headlining. Wood nailing strips are placed in the bottom framing for securing the flooring, there being one deafening floor below the sills and the two upper floors. The finished floor is of "Flexolith" Composition Material, manufactured by the General Railway Supply Company. This composition is laid over expanded metal, which is attached to the upper course of wood flooring. The lower floors are further



Floor Plan of Library Car.

Volume 30 Insert p68

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N.Y. Fri., Oct. 1, 1909

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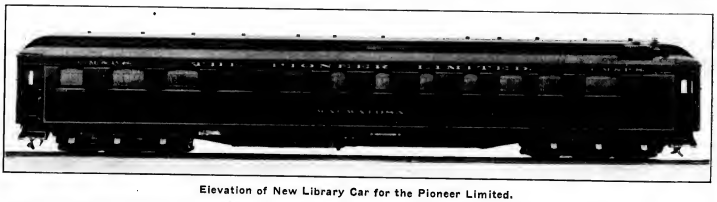

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These buffet library cars are 72 ft. 6 in. long over end sills, 10 ft. wide over the frame, and are built with complete self-supporting steel underframes and steel frame work for the superstructure. The underframes are composed of built-up girder center sills and built-up side trusses in connection with the Commonwealth Steel Company's combined cast steel double body bolsters and platforms. The center construction consists of two $\frac{5}{16}$-in. web plates 30 in. deep at the central portion between the cross ties, tapering to 12 in. at the point of juncture with the bolsters, with four 3½-in. x 3½-in. x $\frac{5}{16}$-in. angles at the bottom of the webs, two 3½-in. x 3½-in. x $\frac{5}{16}$-in. angles at the top and one 24-in. x $\frac{5}{16}$-in. top cover plate. The side trusses consist of 24-in. x $\frac{5}{16}$-in. web plates with one 3-in. x 4-in. x $\frac{5}{16}$-in. angle at the top, one 3-in. x 4-in. x $\frac{5}{16}$-in. and one 3-in. x 3-in. x $\frac{5}{16}$-in. angle at the bottom. The top angle is placed on the inside of the web plate forming a foot rest. The $\frac{5}{16}$-in. angle is placed outside of the web plate and carries the wood railing strip to which the side sheathing is secured. The center construction is designed to resist the pulling and buffing shocks and to carry a proportion of the load, while the side trusses take care of the balance of the load.

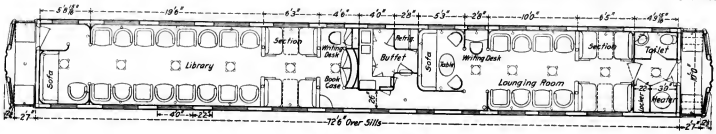
There are four Commonwealth Steel Co.'s cast steel cross ties and center filler castings per car, all 30 in. deep, the object being to equalize and distribute the load between the center construction and the side trusses. The floor supports between the cross ties are 4-in. channels.

The end framing and anti-telescoping device is composed of eight 4-in. "Z" bars at each end of the car, the lower ends extending down into pockets cast in the steel platform and riveted to the end sill sections. The upper end of each of these "Z" bars has the web cut out and the inner flange pressed back even with the outer flange, and both flanges are riveted to a pressed steel end plate, which in turn is securely connected to the side plates and roof framing of the car.

The side framing consists of $\frac{5}{16}$-in. pressed steel channel-shaped posts running from the side plates to the bottom of the side trusses. Each of these posts extends the full depth of the side truss and has a larger inner flange at this point, which provides an extremely large surface for securely riveting the post in position.

The side girths are composed of 3-in. x 3-in. x $\frac{5}{16}$-in. angles fitted and riveted between the pressed steel posts. The side plates, which are continuous, are of 3-in. x 3-in. x $\frac{5}{16}$-in. angles. The deck sills are continuous steel angles 4-in. x 4-in. x $\frac{5}{16}$-in. The deck plates are of $\frac{5}{16}$-in. pressed steel channel-shaped sections. The rafters, for both the upper and lower decks, are of angle section 2-in. x 1¼-in. x $\frac{5}{16}$-in., bent to shape and riveted directly to the deck sills and the deck plates, and secured to the side plates by malleable iron castings riveted to the lower deck rafter and the side plates.

Nailing strips are bolted to the side posts and the rafters for securing the outside sheathing, the roof, the inside finish and the headlining. Wood nailing strips are placed in the bottom framing for securing the flooring, there being one deafening floor below the sills and the two upper floors. The finished floor is of "Flexolith" Composition Material, manufactured by the General Railway Supply Company. This composition is laid over expanded metal, which is attached to the upper course of wood flooring. The lower floors are further



Floor Plan of Library Car.

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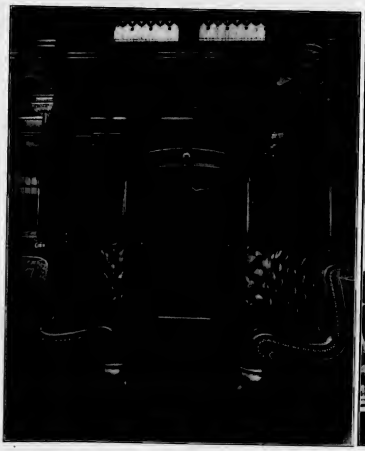
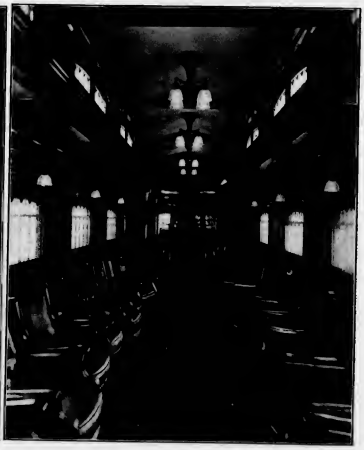
Interior of Library End, Showing Sofa.

Interior of Lounging End.



Interior of Lounging End, Showing Stationary Seat Section.



Library End, Looking Toward Book Case.

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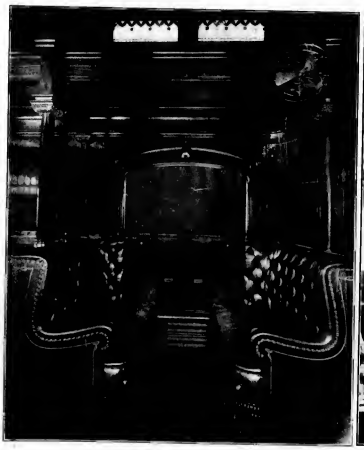

Interior of Lounging End, Showing Stationary Seat Section.

Library End, Looking Toward Book Case.

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insulated with a course of 1½-in. hair felt placed between the floor nailing strips.

The draft and buffer attachments are extremely heavy, Miner Friction Draft Rigging and Forsyth Friction Buffers being used. The trucks used under the buffet library cars are the Commonwealth cast steel six wheel truck frame, equipped with Paige 38-in. wheels, Franklin journal box and Diamond special brake beams.

The controlling factor in the floor plan is the fact that instead of being placed at the forward end of the train, as is usual with buffet library cars, this car is to be placed in the middle of the train or between sleeping cars so that sleeping car passengers may enter it from either end. This is likely to prove to be a most convenient and popular arrangement for passengers who want to use the car for reading or lounging.

Exterior End of Steel Frame.

The car is divided into two rooms with the buffet between them. The smaller of the two rooms is the lounging room; the larger is the library or reading room. The former is finished in dark woods with subdued lighting and color effects; the latter in lighter tones with brilliant coloring.

The interior finish of the lounging room is done in a dark wood, native to Peru, where it is known as "Quitacaicon." The builders who have used the wood for several years have given it the name of "Peruvian Mahogany." It is finely figured and takes a perfect polish. The interior finish of the library end is in Cuban mahogany, exquisitely marked. Delicately executed designs in marquetry of rare woods characterize the whole of the interior. All of the marquetry has had the special Barney & Smith treatment to preserve the natural colors of the woods. This treatment consists in carefully coating the marquetry after it is placed in position with a composition which is removed after the ground work has been filled. This treatment gives a clean-cut contrast and naturalness to the marquetry that is lacking in much of this sort of decoration to be found in passenger car ornamentation.

One of the noticeable features of the interior is the entire absence of square or angular corners in the library room. The bulkheads, side walls and partitions have round corners, forming a continuity of line which gives a pleasing relief from the usual box effect and thereby contributes to the general air of comfort and repose, which is the characteristic idea throughout.

The idea of the curved lines is carried into both the lower and upper decks in the library room. The general effect of roominess is much enhanced by the height of the windows. All of the windows stop at the chair rail line and the result is an impression of bulk and strength on the exterior and altitude and space on the interior.

The electroliers are specially designed to suit the general theme and are finished in statuary bronze. Those in the lounging room have iridescent shades while those in the library end have Holophane shades.

The inside windows are of leaded glass with a combination of polished French plate combined in designs of richly colored cathedral glass. The glass in the deck sash is of the same general character.

In the lounging room, the ceiling is finished in canvas and is paneled with massive beams and painted a rich red slightly relieved with gold line ornamentation.

The carpets are of the best Wilton. The chairs, sofas and cozy corners are upholstered in Spanish leather in shades to match the color schemes of the rooms in which they are placed.

Interior of Steel Frame.

According to a consular report, the traffic receipts for the fiscal year ended June 30, 1909, of all railways in Argentina increased by $6,618,440 (gold), or 8 per cent.; the approximate increases for the leading lines are: Buenos Aires and Pacific, $2,311,587; General Buenos Aires Province, $1,459,950; Great Southern, $997,632; Western, $330,922; Entre Rios, $326,055; Santa Fé Provincial, $272,524; Cordoba & Rosario, $170,227; Northeast Argentine, $155,728; Central Cordoba, Central Northern and Northwest Sections, $145,995; Central Northern, $126,529; Buenos Aires Central, $97,330; Central Cordoba, $87,597; Central Argentine, $78,997; North Argentine, $58,298; National Andina, $4,866. The rapidly developing southern and western portions of Argentina show a most marked increase in the traffic receipts.

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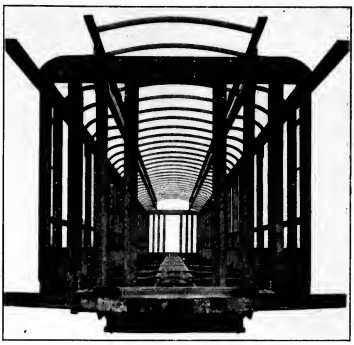

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Railway Review, Chicago, Sat., Oct. 2, 1909

EQUIPMENT AND STRUCTURES.

Cars and Locomotives.

—The Chicago, Milwaukee & St. Paul is in the market for 162 passenger cars. The division is as follows: Eighteen baggage, 18 combination mail and baggage, 54 coaches, 18 diners, 18 tourist sleepers, 27 sleeping cars and nine compartment observation cars.

—The Atchison, Topeka & Santa Fe has placed an order with the American Car & Foundry Co. for 33 cabooses.

—The Chicago City Railway Co., which was reported in our issue of Sept. 11 to be preparing specifications for 50 new pay-as-you-enter cars, has ordered these cars from the American Car Company.

—The Lake Superior & Ishpeming is in the market for 200 ore cars.

—The Idaho Southern has ordered an eight-wheel passenger engine from the American Locomotive Co.

—The Delaware & Hudson, which was reported in our issue of September 11 as being in the market for a number of Mallet compound locomotives, has ordered six locomotives of this type from the American Locomotive Co.

—The Chesapeake & Ohio is said to be contemplating the purchase of a number of all-steel passenger cars.

—The Northern Pacific is in the market for from 500 to 1000 fifty-ton self clearing ore cars.

—The Denver, Northwestern & Pacific is in the market for 100 gondola cars.

—The Detroit & Mackinac has ordered a six-wheel switch engine from the American Locomotive Co.

—The Toledo & Ohio Central is reported to be in the market for 500 30-ton box cars, with steel underframes.

—The Virginian Railway is stated to be in the market for 10 cabooses and eight passenger coaches.

—The Pere Marquette has ordered 12 locomotives from American Locomotive Co.

—The Terminal Railroad Association of St. Louis has been authorized by its board of directors to purchase ten switching engines.

—The Little River Railroad is reported to have ordered a 77-ton locomotive from the Lima Locomotive & Machine Co.

—The Valdosta Street Railway, Valdosta, Ga., is in the market for two electric cars.

—The Louisville & Nashville is reported to be building a number of new freight cars at its New Decatur shops.

—The item in the Railway & Engineering Review of September 25 regarding the recent order for 815 work cars placed by the Harriman Lines, should have stated that these were Hart Convertible cars and that they were ordered from the Rodger Ballast Car Co., Railway Exchange building, Chicago and not from the American Car & Foundry Co. The American Car & Foundry Co. will, however, build these cars for the Rodger company.

—The Chicago & Alton has sent five of its locomotives, Nos. 56, 54, 59, 137 and 217, to the Hicks Locomotive & Car Works, Chicago Heights, Ill., for repairs. The road has also sent five locomotives to the American Locomotive Co. for repairs.

—The Texas Company, Stewart building, Houston, Texas, has ordered 103 steel underframe tank cars from the American Car & Foundry Co.

—The Great Northern, which recently ordered a number of passenger cars from the Barney & Smith Car Co., is reported to be in the market for a large number of passenger cars.

—The Cumberland & Pennsylvania is building three Class F, consolidation freight locomotives at its shops at Mt. Savage, Md. The total weight of each engine is 174,500 pounds and the tank capacity is 5,000 gallons. The locomotives were mentioned in the Railway Review of May 22.

—The Glen Rose & Walnut Springs Ry., Glen Rose, Texas, wants prices and information regarding gasoline motor cars. A. L. Sadler is vice-president of the company.

—The Pennsylvania Equipment Co., 1209 West End Trust building, Philadelphia, Pa., is in the market for 10 thirty-ton second-hand flat cars and a second-hand electric locomotive of twenty tons capacity.

—The New York, Ontario & Western is in the market for eight coaches and three locomotives.

—The Birmingham Southern R. R., Birmingham, Ala., is reported to be in the market for 80 coke cars, 10 box cars, 10 hopper cars and 10 flat cars.

—The Atlantic Coast Line has ordered 50 Hart Convertible cars from the Rodger Ballast Car Co. This item has been incorrectly published recently in various papers, the type of car having been reported as the Rodger ballast car.

Railroad Age Gazette, N.Y., Fri., Oct. 15, 09

CAR BUILDING.

The Norfolk & Western is in the market for 1,500 freight cars.

The Cincinnati Traction Co. has ordered 50 cars from the Cincinnati Car Co.

The Lehigh Valley is said to be figuring on passenger cars. This is not yet confirmed.

The Illinois Central is said to be negotiating with the Pullman Co. for several all-steel cars.

The New York Central Lines have ordered 600 low-side gondolas from the Pressed Steel Car Co.

The Southern Pacific has been figuring on 84 steel interurban cars for use near San Francisco.

The Cudahy Refrigerator Line, South Omaha, Neb., is building 100 refrigerator cars at its own shops.

The Chicago Great Western is having a private car built by the Pullman Co. for the use of the president, S. M. Felton.

The Louisville & Nashville has purchased all material and specialties for all rolling stock the building of which has been authorized.

The Great Northern has ordered from the Pressed Steel Car Co. the 1,000 ore cars mentioned in the *Railroad Age Gazette* of August 27.

The Denver, Laramie & Northwestern is reported to have ordered eight coaches and a number of box and flat cars. This is not yet confirmed.

The Philippine Railway has ordered from the American Car & Foundry Co. the 15 flat cars and the 10 box cars mentioned in the *Railroad Age Gazette* of July 23.

The Virginian Railway has ordered from the Harlan & Hollingsworth Corporation eight coaches and six baggage cars. The coaches were mentioned in the *Railroad Age Gazette* of October 1.

The National Railways of Mexico are taking prices on the following passenger equipment: Ten first-class coaches, five second-class coaches, eight baggage, mail and express cars, and three express cars.

The Canadian Pacific recently ordered 250 box cars, 8 sleeping cars, 3 flangers and 3 snow plows from the Angus shops and 10 vans from the Farnum shops. This equipment includes that mentioned in the *Railroad Age Gazette* of July 23.

The Chesapeake & Ohio has ordered from the Standard Steel Car four all-steel coaches and four all-steel combination passenger and baggage cars. The number of these cars was reported in the *Railroad Age Gazette* of October 8 as being 20. The special equipment includes:

Axles	Steel
Bolsters, body	Cast steel
Bolsters, truck	Steel
Brakes	Westinghouse
Brake-beams	Diamond special
Brake-shoes	Steel-back; Am. Brake-Shoe & Fdry Co.
Brasses	C. & O. standard
Couplers	M. & C. Company
Curtain fixtures	National
Curtain material	Pantasote
Draft gear	Miner
Heating system	Penna. standard
Lighting system	Axle device; U. S. Lt & Heating Co.
Paint	C. & O. Standard
Platforms	Cast steel
Seat Covering	Plush
Side bearings	Miner
Springs	Ry. Steel-Spring Co.
Trucks	Commonwealth Steel Co.
Vestibules	Pullman, wide
Vestibule trap doors	Steel
Weather strips	Detroit metal
Window fixtures	National

Railway Review, Chicago, Sat., Oct. 16, 1909,

—The Illinois Central is said to be negotiating with the Pullman Co. for a number of all-steel cars for its new through-passenger train between Chicago and Jacksonville.

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RAILROAD AGE GAZETTE
N.Y., FRIDAY, OCT. 22, 1909.

STATE COMMISSIONS.

The Kansas Railway Commission has notified the Pullman Company that unless it makes a maximum berth rate of $1.50 and a maximum seat rate of one-half a cent a mile in Kansas by November 15, proceedings will be begun to compel the adoption of these rates. The rates demanded are those which have been established in Oklahoma.

The Pullman Co. has ordered from the Allis-Chalmers Co. Milwaukee, Wis., two steam turbines and generators, aggregating 5,000 h.p., together with auxiliary apparatus.

The Pennsylvania, as mentioned in the *Railroad Age Gazette* of October 8, has ordered 96 suburban type, M. P. 54, steel passenger cars, as follows: Thirty-two coaches and 18 combination cars from the American Car & Foundry Co., 30 coaches from the Pullman Co. and 16 coaches from the Standard Steel Car Co.

RAILWAY REVIEW
CHICAGO, SAT., OCT. 23, 1909.

—The Chicago, Milwaukee & St. Paul, which road has been asking for prices on 2,2 passenger cars embracing all varieties of passenger train equipment is reported to have ordered 200 of these [illegible] from the Pullman Co.

[illegible] Toledo & Ohio Central, which road was reported in our issue of October 2 to be in the market for 500 thirty-ton box cars, with steel underframes, has ordered these cars from the Pullman Co.

—The Pullman Co. has announced that a quarterly dividend of two dollars per share from net earnings will be paid Nov. 15, 1909, to stockholders of record at close of business Oct. 30, 1909.

—The Illinois [illegible]

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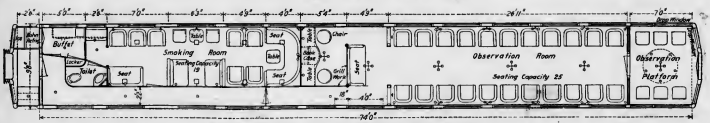
ited No. 1. They are set apart exclusively as a lounging place for passengers in the sleeping cars on this train.

Each car is divided into four separate rooms, the club room in the front being completely shut off from the rest of the car by an aisle running alongside. This room is supplied with circular and straight divans, with movable armchairs, all upholstered in dark Spanish leather, and with tables, fixed and movable. There is a buffet attached, with an attendant in charge. The apartment is finished in dark golden oak with art glass panels above the windows and art glass lights. The deck, the same as the rest of the car, is finished in ivory shade.

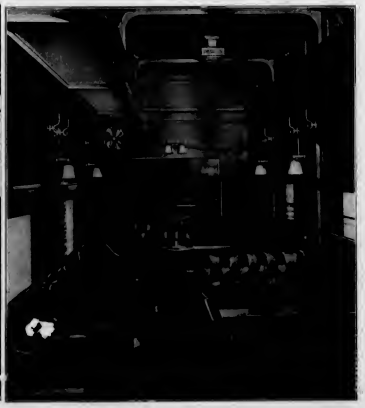
Back of the club room is a writing room entirely enclosed by a mahogany grill, containing two writing desks, President Elliot's 5-ft. shelf of books, the current magazines, and a telephone, which is connected while the train remains at terminals. Back of this is the main lounging room for ladies and gentlemen, no smoking being permitted in this room. It is finished in light-colored Cuban mahogany, in distinct contrast to the clubroom, and has armchairs seating 22 persons. Back of this main lounging room is the novel feature of the car—a sun-parlor in winter and a veranda in summer. It is finished to conform to the main lounging room, but is entirely enclosed in glass, quickly removable if weather permits. This room seats ten to twelve persons and is entirely protected from the weather. It is as free from dust and cinders as the main portion of the car, and therefore has the advantages of the ordinary observation

New Lounging Car for the Burlington.



Floor Plan of Lounging Cars for the Burlington.

Observation Room.



Smoking Room.

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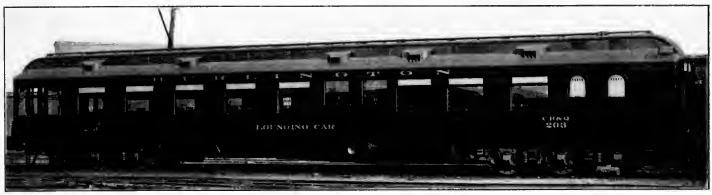

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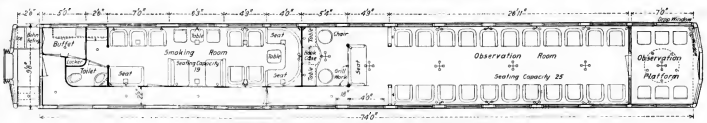

Floor Plan of Lounging Cars for the Burlington.

Observation Room.

Smoking Room.

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platform without the discomforts. There are no steps at this end of the car whatever, and, therefore, nothing to mar the comfort of the passenger.

These cars, which were put on last month, have proven to be one of the most popular features adopted. During one of the trips the 55 sleeping-car passengers in the train mailed

Telephone and Writing Room.

an unsolicited testimonial to the passenger traffic manager of the road commending the company for the installation of the cars.

THE ADJUSTED TONNAGE FORMULA FOR DETERMINING TRAIN LOADS.

BY ALEXANDER P. GEST,
Superintendent, Belvidere Division, United Railroads of New Jersey.

The investigation of the subject of train resistances has held a prominent place in the minds of operating officers for the past decade, and it is to be hoped that we may some day arrive at its solution, but there are so many elements involved that the complete analytical formula would be too complicated for practical use in determining proper train loads. What is wanted for every day use in making up trains is a simple formula, convenient in its application, and sufficiently reliable in its results, bearing in mind that the variations between different cars are such as to prevent absolute accuracy in the application of any real rule.

Several methods have been devised with these objects in view, but that commonly known as the "Adjusted tonnage" method, seems to combine substantial accuracy and readiness of application in a higher degree than any of the others.

The objection most commonly urged against "Adjusted tonnage" is that it is at best rough and unscientific approximation; but, as stated above, different cars vary so much in their tractive resistance under the same load that an approximation is all that can be looked for, and the purpose of these remarks is to show that although but an approximation, it is based upon correct mathematical considerations; and it has besides the advantage that it can be worked up for any particular ruling grade or controlling point by a series of simple observations on trains in regular service and under ordinary working conditions.

If the tractive resistance of a car were in all cases proportional to the weight of the car, we should have the formula

$$r = f\,w$$

in which r = the resistance of a single car,
w = the weight of car and lading
and f = the "coefficient" of friction.

It is well known, however, that the resistance is not strictly

LOUNGING CARS ON THE BURLINGTON.

The Burlington has adopted a novel type of club car, known as a lounging car, which were built by the Pullman Company, and have been installed on the Chicago-Denver Lim-

Observation Platform.

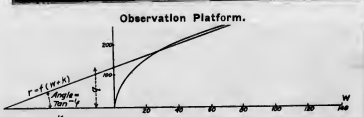

Fig. 1.

ws, equal to the total weight of the train, we have for a train of n cars

$$R = f\,W + n\,q,$$

and similarly for a train of n_1 cars

$$R_1 = f\,W_1 + n_1\,q,$$

and for two trains of equal resistance we have

$$f\,W + n\,q = f\,W_1 + n_1\,q,$$

whence

$$\frac{q}{f} = \frac{W_1 - W}{n - n_1}$$

writing k for $\frac{q}{f}$, we have the resistance of a train

$$R = f\,(W + n\,k)$$

or

$$\frac{R}{f} = W + n\,k$$

in which $\frac{R}{f}$ is the "adjusted tonnage" rating of the engine, and is equal to the total weight of the train plus n times k; and the rule for adjusted tonnage loading is immediately

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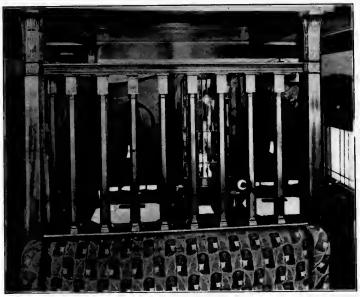
platform without the discomforts. There are no steps at this end of the car whatever, and, therefore, nothing to mar the comfort of the passenger.

These cars, which were put on last month, have proven to be one of the most popular features adopted. During one of the trips the 55 sleeping-car passengers in the train mailed



Telephone and Writing Room.

an unsolicited testimonial to the passenger traffic manager of the road commending the company for the installation of the cars.

THE ADJUSTED TONNAGE FORMULA FOR DETERMINING TRAIN LOADS.

BY ALEXANDER P. GEST,
Superintendent, Belvidere Division, United Railroads of New Jersey.

The investigation of the subject of train resistances has held a prominent place in the minds of operating officers for the past decade, and it is to be hoped that we may some day arrive at its solution, but there are so many elements involved that the complete analytical formula would be too complicated for practical use in determining proper train loads. What is wanted for every day use in making up trains is a simple formula, convenient in its application, and sufficiently reliable in its results, bearing in mind that the variations between different cars are such as to prevent absolute accuracy in the application of any general rule.

Several methods have been devised with these objects in view, but that commonly known as the "Adjusted tonnage" method, seems to combine substantial accuracy and readiness of application in a higher degree than any of the others.

The objection most commonly urged against "Adjusted tonnage" is that it is at best rough and unscientific approximation; but, as stated above, different cars vary so much in their tractive resistance under the same load that an approximation is all that can be looked for, and the purpose of these remarks is to show that although but an approximation, it is based upon correct mathematical considerations; and it has besides the advantage that it can be worked up for any particular ruling grade or controlling point by a series of simple observations on trains in regular service and under ordinary working conditions.

If the tractive resistance of a car were in all cases proportional to the weight of the car, we should have the formula

$$r = f\,w$$

in which r = the resistance of a single car,
w = the weight of car and lading
and f = the "coefficient" of friction.

It is well known, however, that the resistance is not strictly

LOUNGING CARS ON THE BURLINGTON.

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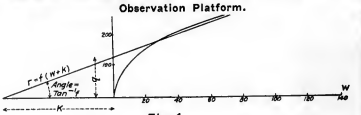

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Railroad Officers.

ELECTIONS AND APPOINTMENTS.

Executive, Financial and Legal Officers.

Robert S. Lovett has been elected president of the Union Pacific, also president of the Oregon Short Line, succeeding E. H. Harriman, deceased. See account of his life in another column of this issue.

F. C. MacArthur has been appointed car accountant, secretary and treasurer of the Dairy Shippers' Despatch and the dairy department of the Lackawanna Line, with office at Chicago, succeeding R. G. Root, deceased.

Edward P. Higgins, auditor of disbursements of the Cleveland, Cincinnati, Chicago & St. Louis, has been promoted to assistant auditor, with office at Cincinnati, Ohio. G. N. Wellman succeeds Mr. Higgins, with office at Cincinnati.

William Mahl's new title of vice-president, as well as comptroller of the Union Pacific and Southern Pacific systems, indicates a promotion, and yet to those who know the work, and perhaps to himself, it seems to remove him from a class where he was pre-eminent and there is a slight feeling of regret at the change. For many years no one would have hesitated in naming him as the first comptroller in the land, whether considered as a pioneer or as a present day officer in the design and preparation of railway statistics for profitable use as operating lessons, or as a clear statement of assets and liabilities. We re-discover a great many things. It was 44 years ago that in the annual reports of two of the constituent companies of the Louisville & Nashville the following credit was given by the president:

William Mahl.

"Through Mr. Mahl's assistance we have thoroughly systematized our accounts and have distributed under the head of freight and passengers all expense accounts. We are thus enabled to arrive at the cost of carrying per mile a passenger and a ton of freight. * * * They will become valuable in arranging your tariff of freight and passengers and in determining the relative economy of operation of these and other roads."

Mr. Mahl has in his entire railway service of nearly 50 years been singularly fortunate in serving under great men: Albert Fink, Thomas A. Scott, Collis P. Huntington and E. H. Harriman. Inspiration comes from the top. He never served under a small man; indeed, the list of his superior officers begins, and nearly completes, the roll call of the greatest railway men this country has produced.

Inspiration from the top is a great factor in the success of any man, but it is far from being enough. Mr. Mahl had in addition to this the ability and the essential qualities of industry and integrity; but, after all, his great value as an accountant, a statistician and organizer, comes primarily from his early thorough and really broad experiences. He began as a shop apprentice, became a journeyman, a draftsman, a chief clerk, a purchasing agent, an auditor, a financial agent, a general superintendent. There is a great deal of difference in the meaning and use of figures by a professorial statistician of the Interstate Commerce Commission and by one to whom all these figures are graphic representing concrete facts in operation and items of equipment of which he has full knowledge. Figures representing sums of money have quite different meanings to one whose business it is to receive and disburse huge sums, and to another whose study of them is purely academic.

Mr. Mahl was born in Carlsruhe, Baden, December 19, 1843, and came to America with his parents in 1852. In 1860 he was entered as an apprentice in the shops of the Louisville & Nashville. In four years he became successively a machinist, a draftsman and chief clerk in the mechanical department. From 1864 to 1872 he was auditor and purchasing agent of the Louisville, Cincinnati & Lexington. For a few years he served under Colonel Scott as auditor, purchasing agent and financial agent of the Texas & Pacific. Soon after the panic of 1873 he returned to the Louisville, Cincinnati & Lexington, becoming its general superintendent. In February, 1882, Mr. Huntington called him to New York, where he served successively as general agent, comptroller and assistant to the president of the Chesapeake & Ohio and the Southern Pacific and the various collateral railways, steamship lines and other large interests of Mr. Huntington. After Mr. Huntington's death Mr. Harriman continued and extended Mr. Mahl's functions so as to cover the entire Union Pacific and Southern Pacific systems.

T. J. Elton, assistant secretary of the Manistee & Northeastern, has been elected secretary, with office at Manistee, Mich., succeeding William Douglas, resigned.

Operating Officers.

Grant Geddes, assistant superintendent of the Sumpter Valley at Baker City, Ore., has been appointed general superintendent, with office at Baker City.

F. L. Butler has been appointed general manager of the Denver & Intermountain, with office at Denver, Colo. F. N. Dawson has been appointed a trainmaster.

W. L. Connelly, superintendent of telegraph of the Chicago, Indiana & Southern at Gibson, Ind., has been appointed trainmaster of the Danville division, with office at Danville, Ill.

W. E. Miller has been appointed superintendent of the first division of the Denver & Rio Grande, with office at Pueblo, Colo., succeeding F. R. Rockwell, granted a leave of absence.

W. S. Logan has been appointed manager of the Dairy Shippers' Despatch and of the dairy department of the Lackawanna Line, with office at Chicago, succeeding R. G. Root, deceased.

F. M. Barker, general yardmaster of the Lehigh Valley at Sayre, Pa., has been appointed inspector of transportation, with office at South Bethlehem, Pa., succeeding J. N. Haines, transferred.

George W. Hulsizer, formerly with the Southern Railway at Washington, D. C., has been appointed signal engineer of the Chicago & Alton, with office at Bloomington, Ill., succeeding George W. Daves, resigned to engage in other business.

Thomas Brennan, assistant superintendent of the Chicago, Indiana & Southern at Danville, Ill., has had his jurisdiction extended over the Indiana Harbor Belt Railroad, and will assume also the duties of superintendent of telegraph, with office at Gibson, Ind.

W. R. Hastings, superintendent of signal construction on the Chicago, Rock Island & Pacific, has been appointed general signal inspector, and the office of interlocking engineer has been abolished. B. H. Richards, lamp inspector, succeeds Mr. Hastings, and J. H. Benedict succeeds Mr. Richards, all with offices at Chicago.

Traffic Officers.

Paul S. Weever, traveling passenger agent of the Rock Island-Frisco lines at Nashville, Tenn., has been transferred to Cincinnati, Ohio.

A. E. Melbin has been appointed a contracting freight agent of the Great Northern, with office at Spokane, Wash., succeeding E. H. Gibbon, resigned.

H. S. Stebbins, division freight agent of the Erie at Rochester, N. Y., has resigned to become traffic manager of the

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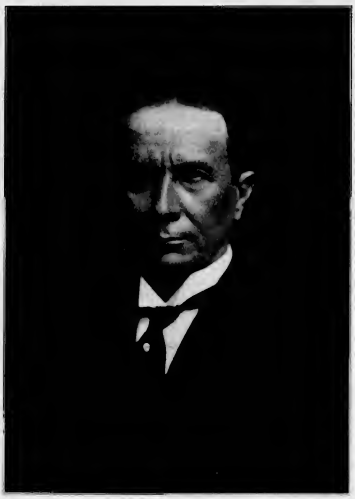
ROBERT S. LOVETT.

Judge Robert S. Lovett, who was elected chairman of the executive commitee of the Union Pacific and Southern Pacific on September 13, shortly after the death of E. H. Harriman, was on October 21 elected also president of the Union Pacific. At the time of Harriman's death it was generally predicted that the autocratic power and responsibility concentrated on one man, by the same man holding both the chairmanship of the executive committee and the presidency, would not be transmitted, but that the directors would elect one man as chairman of the executive committee and another as president.

The election of Judge Lovett to both offices shows that not only did the directors believe that the form of organization which has been so successful in the past should be preserved, but shows also that they believe that they have found a man who is capable of taking over the great responsibilities which Harriman assumed. It is impossible not to contrast the personality and methods of work of the former head of the Harriman Lines and his successor. Harriman could by no stretch of imagination be called a diplomat; his methods were those of a born fighter and of a man who needed only his own approval of his plans. Judge Lovett is a diplomat in the best sense of the word. While Harriman made a horde of bitter enemies, not a feeling even of envy has been expressed toward the promotion of his successor. Men who have worked in close personal touch with Judge Lovett during the five trying years that he has been in New York as vice-president and general counsel for the Harriman Lines say that they have never heard him raise his voice, nor have seen him lose his temper. He is considerate of those about him to an extraordinary degree. He is always ready to listen to advice, and while he by no means always follows the advice, he rejects it in such a way that the adviser feels personally complimented.



Photograph by The Misses Selby.

Robert S. Lovett.

There have been a good many misleading statements made about Judge Lovett's boyhood. He was born in 1860, just a year before the outbreak of the civil war. His family at that time were considered well-to-do in that part of Texas where they lived. His father was a slave owner and, as such, a large property. After the war, and especially during the years of construction, when the boy was about [illegible] family, along with the rest of the South, were hard up, but they were not of the poor, and young Lovett was given a country school education and was offered a chance by his father to study medicine at New Orleans. He refused, and asked a chance to take a course at a law school. This led to a quarrel, and the boy, refusing what his father was willing to give him, went to work for himself. It is quite true that he worked at one time for the Houston East & West Texas at pretty small pay. He worked his way through high school, and later studied law in the office of Charles Stewart, and almost from the beginning of his practice at the bar, was a railway attorney.

He became attorney for the Gould roads in Texas when he was 29, and was in close touch with the management of those roads. In 1892 he became a member of the law firm of Baker, Botts, Baker & Lovett. This firm later were made attorneys for the Southern Pacific, but Judge Lovett's work for a number of years took him into general practice as well as into work for railways. The firm of which he was a member were general counsel of the Southern Pacific at the time that Harriman acquired the property after the death of Collis P. Huntington. Five years ago Harriman brought Judge Lovett on to New York, and had him elected vice-president and general counsel of both the Union Pacific and the Southern Pacific. During the five years in New York his relationship with Harriman was very close indeed. During Harriman's absences he served his apprenticeship as the managing head of the Harriman Lines, and it is probably safe to say that he was more in Mr. Harriman's confidence in regard to the management of the properties in which Harriman had a direct or indirect interest than any other man. The recent election of Judge Lovett to the boards of directors of various roads to succeed Harriman is proof of this.

Besides their confidence in the man's ability to take over Harriman's duties, the directors were influenced strongly in their selection of a president for the Union Pacific and Southern Pacific by this intimate knowledge that Judge Lovett possessed of Harriman's general plan of railway management. The former president was not one to unfold his plans fully to anyone, but as general counsel for the Harriman railways, and as chief legal adviser to the man himself, Judge Lovett probably learned more than anyone else possibly could of the ambitions, and plans for carrying out these ambitions, of the greatest railway strategist and railway organizer that has ever lived.

HUNGARIAN RAILWAY PURCHASE.

The Hungarian government has a commission which examines into all purchases made for the railways (by far the larger part of which it works itself) and reports how much was the product of foreign and how much of Hungarian industry, and endeavors to point out what imported articles might have been produced at home. It has recently reported for 1907, when the railways purchased articles to the amount of $40,770,000, of which 19½ per cent. was imported against 13.9 per cent. the year before. This was due chiefly to the fact that the railways paid $6,000,000 for foreign coal in 1907 and only $2,000,000 in 1906.

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TEN-WHEEL LOCOMOTIVES FOR BRAZIL.

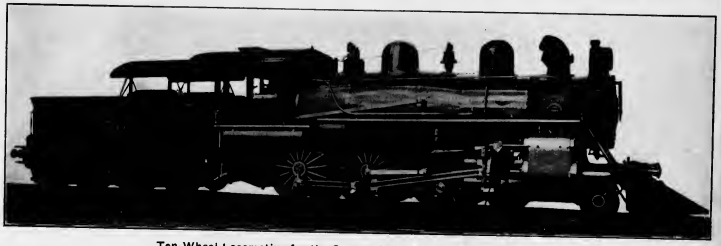
The accompanying illustrations represent two designs of ten-wheel locomotives recently built for Brazilian roads by the Baldwin Locomotive Works. The engine for the Timbo-Propriá road is one of 12 intended for general road service. The line has grades of 2 per cent. and curves of 492 ft. radius, and the track gage is one meter. These locomotives exert a tractive force of 15,500 lbs.

The cylinders are placed on an incline of 1 in 48, and the steam distribution is controlled by balanced slide valves. Walschaerts motion is used and the reversing gear is of the Belpaire type, with a combined lever and screw. The frames, driving wheel centers, driving boxes, engine truck boxes and crossheads are among the more important cast steel details.

Locomotive No. 350, for the Central Railway of Brazil, is one of six engines built for passenger service. The track gage is 5 ft. 3 in. These locomotives are of special interest, as their equipment includes smokebox superheaters. This road has been experimenting for some time with consolidation freight locomotives equipped with smokebox superheaters and ten-wheeled passenger locomotives fitted with fire-tube superheaters. The selection of the smokebox type for the new engines indicates that this pattern is particularly adapted to service conditions on the Central of Brazil.

The engines under notice carry a moderate steam pressure of 160 lbs., and exert a tractive force of 22,980 lbs. As the weight on drivers is 105,500 lbs. the ratio of adhesion is 4.58.

The cylinders are single-expansion, equipped with inside admission piston valves driven by Walschaerts motion. The



Ten-Wheel Locomotive for the Central Railway of Brazil. 5 ft. 3 in. Gage.

The boiler is straight topped, with a long firebox placed above the frames. Wood fuel is used and is burned on a grate composed of plain bars and dead plates. The stack is built in accordance with the railway company's practice, and is generally similar to the Radley & Hunter type. The smokebox is short and is fitted with a low double nozzle.

These engines are equipped with the Le Chatelier water brake, in addition to the automatic air-brake on driving and tender wheels. The boiler is fed by one injector and one pump. Owing to lack of room outside, because of the use of Walschaerts gear, the pump is placed between the frames and is driven by an eccentric attached to the main axle.

The tender frame is composed of 6-in. channels and the trucks are equipped with solid forged and rolled steel wheels supplied by the Standard Steel Works Company.

valves are 12 in. in diameter. The links are supported outside the leading drivers by longitudinal bearers, which also carry the reverse shaft bearings. The valve rods are connected to long crossheads, which slide in brackets bolted to the top guide bars. The combining levers are pinned directly to these crossheads. The piston and valve rods are extended through the front heads.

The driving tires are held by shrinkage, shoulders and set-screws. The main wheels have plain tires, the others being flanged. The wheel centers and boxes are of cast steel, as are also the crosshead bodies and main frames.

The boiler is of the wagon-top type, with a narrow firebox placed above the rear driving axle and between the frames. Cardiff coal is used as fuel; it is burned on a grate composed of water-tubes and pull-out bars, and the furnace equipment

Ten-Wheel Locomotive for the Timbo-Propria Line, Brazil. Meter Gage.

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includes a brick-arch. The crown sheet is flat and is stayed with T bars hung on expansion links.

The equipment includes the Le Chatelier water brake, in addition to automatic air-brakes on driving and tender wheels. Two electric headlights are provided. The tender has a steel channel frame, and the trucks are of the equalized type with half elliptic springs. The tender wheels are of forged and rolled steel, supplied by the Standard Steel Works Co.

The illustration shows this locomotive equipped with a smoke-deflecting stack. A straight stack of ordinary construction was also supplied.

These engines display a considerable amount of high finish, paint and brass work. The principal dimensions of both classes are given in the tables.

	Central.	Timbo-Proprid.
Gage	5 ft. 3 in.	3 ft. 3⅝ in.
Cylinders, diameter	21 in.	16 in.
Piston, stroke	26 in.	20 in.
Boiler, diameter	62 in.	48 in.
" thickness, sheets	¼ & ⅝-in.	⅜-in.
Steam pressure	160 lbs.	160 lbs.
Fuel	Cardiff coal.	Wood.
Staying	⅄ Crown bar.	Radial.
Firebox, material	Steel	Steel.
" length	90⅝ in.	83¼ in.
" width	38 "	26 "
" depth, front	68½ "	54⅝ "
" depth, back	51¾ "	45⅝ "
" thickns, sds & bk	⅝ "	⅞ "
" thickness, crown	⅝ "	⅝ "
" thickns, tubesbts	½ "	½ "
" water spce front	4 "	3½ "
" water sides & bk	3 "	3 "
Tubes, material	Iron.	Iron.
" thickness	No. 12 W. G.	No. 12 W. G.
" number	268	192
" diameter	2 in.	2 in.
" length	13 ft. 2⅝ in.	11 ft. 9½ in.
Heating surface, firebox	132 sq. ft.	90 sq. ft.
" " tubes	1,841 "	809 "
" " arch tubes	13 "	"
" " total	1,986 "	899 "
Grate area	25.5 "	15 "
Wheels, diam. driving	68 in.	45 in.
" " truck	30½ in.	24¼ in.
" " tender	36½ "	28 "
Journals, driving	8 in. x 9 in.	6½ in. x 7 in.
" truck	5½ in. x 10 in.	4 in. x 6¼ in.
" tender	4½ in. x 8 in.	3⅝ in. x 7 in.
Wheel base, driving	11 ft. 8 in.	10 ft. 0 in.
" " engine	22 " 8 "	19 " 4 "
" " eng. & tendr.	48 " 1½ in.	44 " 3¼ in.
Weight on drivers	105,500 lbs.	63,000 lbs.
" on truck	41,100 "	14,450 "
" engine	146,600 "	77,450 "
" engine and tender.	215,000 "	137,000 "
Tank capacity, water	3,000 gals.	2,000 gals.
Tank capacity, fuel	7 tons.	2 cords.
Service	Passenger.	Pass. & Frt.
Tractive effort	22,980 lbs.	15,500 lbs.
Weight on drivers / Tractive effort	= 4.59	4.06
Total weight / Tractive effort	= 6.12	5.00
Weight on drivers / Total weight	= 71.96*	81.34*
Trac. effort x diam. drivers / Heating surface	= 768.83	775.86
Heating surface / Grate area	= 84.51	59.26
Firebox heating surface / Total heating surface	= 66.46*	10.01*
Weight on drivers / Total heating surface	= 53.12	70.07
Total weight / Total heating surface	= 73.81	86.15
Displacem't, 2 cyls., cu. ft. / Total heating surface	= 10.42	4.65
Displacement, 2 cyls. / Grate area	= 190.59	193.33
Displacement, 2 cyls. /	= 2.25	3.22

*Per cent.

INSPECTION OF BRIDGES AND BUILDINGS.*

INSPECTION OF BUILDINGS.

The bridge foreman is in and around the buildings in his district quite often, and if he does the building work he will report the needed repairs from time to time. On the usual building inspection the idea of rebuilding is seldom brought up. Even though a building is old, it can be repaired and will still serve its purpose just as well as any new building of the same type and size. The more important buildings are rebuilt in order to accommodate a larger volume of business.

The division official in charge of the maintenance of buildings has sufficient opportunities to make inspection of buildings at different times during the year, while going over the road or other business than that of inspection. This, with the information sent in by the building foreman and the employees using the buildings, seems sufficient for building inspection.

INSPECTION OF BRIDGES.

Bridge inspectors can be classified into three kinds—current, general and special inspection.

Current Inspections.—1. The section foreman making the daily track inspection should also stop and examine all bridges and culverts. The object is to discover any broken or damaged parts which might have developed during the past 24 hours, due to storm, fires, derailments, etc. No report need be made of this inspection unless something is found which impairs the safety of the bridge.

2. The bridge foreman should make bi-monthly inspection of all the bridges and culverts in his district. In this way he can keep in touch with the condition of the bridges and plan his work, so as to do first that which is most needed. Owing to floods, derailments, fires or other causes which may have slightly damaged a bridge, it becomes necessary to make repairs not included in the yearly list of repairs. Such cases should be reported to the bridge foreman.

3. Reports from the foregoing current inspections will be received from time to time by the division foreman or supervisor. These will indicate to him which bridges need attention. He should then make inspection of such bridges and decide what shall be done to keep them in safe condition, making a report of the work necessary to his immediate superior, and he in turn to the general official in charge of the maintenance of bridges. It would be of no advantage to use any special form for these reports, and they should be made by letter.

General Bridge Inspection.—This might also be called the annual bridge inspection. It should be made annually, and during this inspection all recommendations for repairs and renewals for the following year should be made. There should be on this inspection the general bridge inspector, division foreman, or superior, and the district foreman.

The general bridge inspector acts as a representative of the chief engineer and the engineer of bridges. He receives direct instructions from these men and should carry out their ideas in making recommendations. This will also tend to give uniformity to the maintenance of bridges over the entire system.

The division foreman and the district foreman know the local conditions at each bridge, which are very important in determining what repairs should be made, of if the bridge should be rebuilt. The current of a stream may have some peculiar action, and in case of a pile bridge there may be some difficulty in keeping it in line, or perhaps the bridge heaves in winter. These, and many other defects, cannot be discovered by an inspector going over the road, unless he happens to arrive at one of this class of bridges just when such defects are apparent.

The chief engineer or the bridge engineer may desire to

*From a committee report to the American Railway Bridge & Building Association.

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investigate personally the more important items of rebuilding, in which case another inspection will be made by one or both of these men, accompanied by the bridge inspector, who will be prepared to give his reasons for the recommendation.

There should be a sufficient number of general bridge inspectors, so that the entire system can be gone over during the time from May 1 to October 31. This applies to the roads in the north; in the south, where the climate is favorable for bridge inspection the entire year the above time limits need not apply.

The notes of the general inspector should be kept in a book made for this purpose. Such books, samples of which were received by the committee, can be divided into three classes, noted below as A, B and C.

A. On one page the bridge number, class, length, number of repairs and height of four or five bridges is given in vertical columns at the top of the page. Just below this, on the same page, the different items which are to be considered at each bridge are indicated by means of horizontal headings. The opposite page has horizontal and vertical lines, so that each pile, stringer or other part of a bridge has a definite square in which its conditions can be noted.

B. One page is the same as in class A, it being the page bearing the number and description of four or five bridges and the items to be considered. The other page is blank, except for the horizontal lines, to be used in making notes.

C. The bridge number, class, length and height are given on one page, in a horizontal line. The other page has only horizontal lines, or is divided into two vertical columns, one for the recommendation and the other for the bill of material.

In the front of each book there should be instructions for making inspections. These will indicate in a general way how the notes are to be written and what is necessary in order to make a good inspection. On each page of the book there should be spaces for the general characteristics of the bridges, such a number, date, class, length and height. The remainder of the page should be left blank for the inspection notes. Each page should also have a heading showing the name of the division, date, name of the inspector and the stations between which the bridges on that page are. This form of a book will allow considerable freedom, and such notes can be made as will apply to the bridge under consideration.

Special Inspections.—The general bridge inspector should have about five months of the year in which to make special inspections. In the northern country it is well to have this time in the winter, when he can get under the bridges on the ice. Another good time for special inspection is while a bridge is being painted, because then the inspector can use the staging swung by the painters.

These inspections are to include all the large bridges, especially the older ones, the object being to spend considerable time on each bridge and a very thorough inspection made. During the annual inspection all bridges should be noted that need such inspection.

CHARLES M. HAYS.

Charles M. Hays.

Charles M. Hays, the new president of the Grand Trunk, was born in 1856 at Rock Island, Ill. After several years' residence in St. Joseph, Mo., the family moved to St. Louis, Mo. Mr. Hays was educated in the St. Louis public schools, and at the age of 17 entered railway service as a clerk in the passenger department of the Atlantic & Pacific, now part of the Frisco, in St. Louis. He took hold of the railway business quickly, and in 1877 entered the service of A. A. Talmage, then vice-president and general manager of the combined Wabash and Missouri Pacific systems, as private secretary. In the performance of his duties in this position his opportunities to acquire a knowledge of the railway business were unlimited, as he came in contact with many of the master minds of the railway service, at the time when the railways of the West were rapidly developing, owing to the large immigration and the settling up of the country west of the Mississippi river.

When the Wabash was separated from the Gould System in 1884, he took a similar position with the old Wabash, St. Louis & Pacific, and later on, in 1886, was appointed assistant general manager under A. A. Talmage, who was general manager for the receivers. On the death of Mr. Talmage in July, 1887, Mr. Hays was appointed general manager of the Wabash Western, comprising all the lines west of the Mississippi river, and that portion of the lines east between Chicago and Detroit—the other portions of the system remaining in the hands of receivers. Mr. Hays was therefore a general manager at the early age of 30 years. On the consolidation of the Wabash Western and Wabash, including all the lines comprising the present Wabash, he was appointed general manager of the entire system.

When Col. J. F. How retired in 1894 he was also elected vice-president, combining the offices of vice-president and general manager.

On December 31, 1895, he resigned his position with the Wabash to become general manager of the Grand Trunk, then comprising a mileage of 4,185.

During one year (1901) Mr. Hays was president of the Southern Pacific, which position he resigned when the property changed hands.

The thirteen years served with the Grand Trunk as general manager and as second vice-president and general manager (to which position he was elected in 1902) have been years of very marked development of the Grand Trunk. The orig-

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inal Grand Trunk has not only been practically rebuilt, but its terminal facilities have been extended and improved, and its earning capacity increased by the reduction of grades, construction of second track, heavier bridges, and the laying of heavier rail throughout. In addition, increased mileage has been added by the control of the Central Vermont, 531 miles; also the absorption of the Canadian Atlantic, extending from Swanton to Depot Harbor, with branches, 462 miles; also the joint control of the Detroit & Toledo Shore Line, extending from Detroit to Toledo, 79 miles.

The number of miles of double track added to the Grand Trunk during Mr. Hays' administration has been 303 miles in Canada and 330 miles on lines in the United States west of the Detroit and St. Clair rivers.

The earnings of the company within this period have increased from $22,759,195 in 1896 to $39,574,653 in 1908, or 57.51 per cent. The net earnings increased from $5,713,553 in 1896 to $9,410,359 in 1908, or 60.72 per cent. The financial position of the company has been very greatly improved, as the stocks are to-day selling at an increased value of about $100,000,000 as compared with their market value in 1896, the first year of Mr. Hays' administration. The credit of the company is now at a high point, as indicated by the market value of the shares, many of which, prior to 1896, were receiving no dividends whatever.

The most important undertaking, outside of the direct operation of the Grand Trunk, entered into by the company has been the promotion, under Mr. Hays' direction, of the Grand Trunk Pacific, extending from Moncton, N. B., to Prince Rupert, B. C. (one of the best ports on the northwest coast of British Columbia), via Quebec, Winnipeg and Edmonton, including branches from North Bay, the present northerly terminus of the Grand Trunk, to a junction with the National Transcontinental, being that portion of the system to be constructed by the government and leased to the Grand Trunk Pacific, extending from Moncton to Winnipeg; with branches from Fort William to Lake Superior Junction, a point on the National Transcontinental, from Regina to a point on the Grand Trunk Pacific, from Calgary and Battleford to junction points with the main line of the new Grand Trunk Pacific east of Edmonton.

The construction of the new line is indorsed, and the successful operation of it guaranteed, by the Dominion Government, while a considerable portion, Winnipeg to Moncton, N. B., is being actually built by the government, to be leased to the Grand Trunk Pacific for a long term of years. The total mileage is about 5,000 miles, and the total expenditure contemplated is in the neighborhood of $150,000,000. When completed, the Grand Trunk system will own, operate and control in the neighborhood of 10,255 miles of railway.

In temperament Mr. Hays, like most strong characters, is very self-possessed, seldom showing irritation or anger; his capacity for work seems unlimited. Always at his desk by 9 o'clock, when at headquarters, he sets a pace that some of his official staff find difficulty in maintaining, and when on the road, on inspection trips, he is usually the first up and out, looking over the company's property and taking a walk, of which he is very fond, before breakfast. His persistency is proverbial among his friends, and he is seldom known to "let go" as long as there is anything to be gained by holding on. He is a governor of McGill University, the leading educational institution of Canada, as well as being a member of the board of management of the two large hospitals, the Royal Victoria and General Hospital, in the work of which he is deeply interested.

The French State Railways have ordered locomotives of the Pacific type of the Creusot and Fives-Lille works. The American nomenclature for types of locomotives seems to prevail in Europe now.

RAILWAY SIGNAL ASSOCIATION.

We continue from last week the report of the annual meeting, held at Louisville, Oct. 12-14.

MECHANICAL INTERLOCKING.

Committee No. 2, on mechanical interlocking, reported having considered three principal subjects: (1) harmonizing reports of committees 2, 3 and 4; (2) pipe connections to home signals without slots, and (3) methods of insuring return of distant signals to the normal position. The harmonizing process has been completed as far as Section 20 of the specifications, and the specifications are again printed with marginal references to the paragraphs in the old form, and to those in the specifications made by the other committees. As to subject No. 2, the committee has not been able to make as full investigation as is desirable, and therefore recommends tentatively that on lines where automatic signals are used or will be used, every high-speed signal should be power operated; that in other places ordinary pipe connections are sufficient; that wherever high-speed is the general rule signals should be semi-automatic, except that slotted mechanical pipe connected signals should be used at drawbridges, and at certain other points where they can be installed cheaper than the power type; and that straight connected mechanical signals are suitable for governing yard movements, etc. Power operated signals cannot be recommended at places where a repairman is not at all times available.

On the third subject the committee had not been able to do anything.

This committee consists of C. J. Kelloway, chairman; L. C. Hartley, vice-chairman; F. H. Buchanan, W. F. Cook, C. H. Durvin, C. E. Goings, E. C. Graham, Harry Hobson, T. A. Jones, C. F. Jones, J. B. Latimer, H. F. Lomas, R. E. Trout, Chas. Stephens, J. I. Vernon and W. B. Wetherhee.

The foregoing was the first report taken up. After a desultory discussion of some of the details, the following changes were adopted and sent to letter ballot. Paragraph No. 200 changed so as to include horizontal cranks; paragraph 265 so as to include concrete foundations; paragraph 340, the note cut out; paragraph 310, clause *d* changed so as to provide locking in either position; paragraph 435, clause *b* clarified. Clause *d* under this specification was protested against as an unreasonable requirement, but no formal action was taken. Paragraph 950, the note following clause *e* was so changed so as to simply require detailed drawings.

The report of this committee on subject No. 2 was accepted as a progress report and the same action was taken on subject No. 3.

POWER INTERLOCKING.

Committee No. 3, reporting on this subject, held three meetings during the year. At Buffalo, May 13, a two days' conference was held with representatives of four signal manufacturing companies, the American, the Federal, the General and the Union, and there was a full discussion of power interlocking and especially of the different methods of "indicating." This committee has co-operated with the others in harmonizing the specifications.

A two-page discussion of methods of indication is presented in the report, but no conclusions are reached.

On the question of a substitute for the mechanical bolt lock, the committee also has had some discussion, but makes no recommendation. The code of specifications for power interlocking, as harmonized with the other codes of specifications, is presented in full in the report.

This committee consists of B. H. Mann, chairman; W. P. Allen, vice-chairman; W. H. Arkenburgh, Alexander Brown, Caleb Drake, E. A. Everett, J. A. Johnson, E. W. Kolb, W. A. Hartley, F. B. Wiegand, R. C. Siegel, R. T. Steele, I. S. Raymer, J. A. Hoffe and W. H. Harland.

This report, the discussion of which immediately followed

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Expenses	19,058,630	18,001,758	17,385,741
Net	$14,742,525	$13,618,482	$14,797,271
Depreciation & other deductions	3,794,323	3,839,557	3,170,937
Surplus	*$10,948,202	$ 9,788,925	$11,626,334
Dividends	7,999,071	7,999,326	7,476,378
Balance	$2,949,131	$ 1,790,599	$ 4,149,956
Previous surplus			

RAILROAD AGE GAZETTE.
N.Y., FRIDAY, DEC. 24, 1909.

60-FT. STEEL POSTAL CAR FOR THE UNION PACIFIC.

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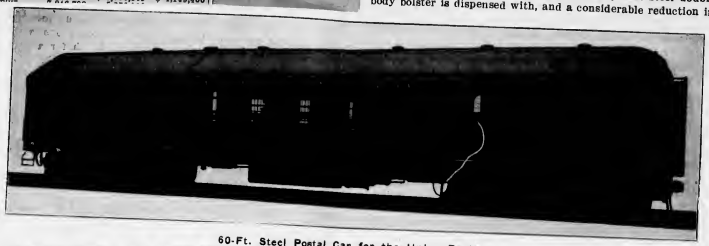

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The car sides have steel posts made of 1½-in. x 4-in. x ⅜-in. angles, spaced 25½ in. centers. There is no diagonal bracing but the sides are stiffened by the sheathing and a heavy angle iron belt rail on the inside. The steel sheathing is ⅜-in. thick below the belt and ⅜-in. above. The end sheathing is ⅜-in. thick.

The roof is the semi-elliptical section which has been adopted as a common standard for the steel passenger equipment of the Harriman lines. The rise from the top of the plate to the top of the roof is 2 ft. 11⅛ in. The steel carlines are ¼-in. x 1⅛-in. x 3½-in. angles, spaced 2-ft. centers. The roof is made up of steel sheets ⅛ in. thick on the outside, a space 2½ in. deep, and steel ceiling .05 in. thick. The principal dimensions of the car are shown in the issue of June 12, referred to above. The car is remarkable for its light weight and illustrates the fact that steel can be employed throughout in passenger car construction without increasing the weight but vastly increasing the strength as compared with the wooden car and with the additional advantage of safeguarding the postal clerks by securing a firer

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NEW YORK, FRI., NOV. 19, 1909

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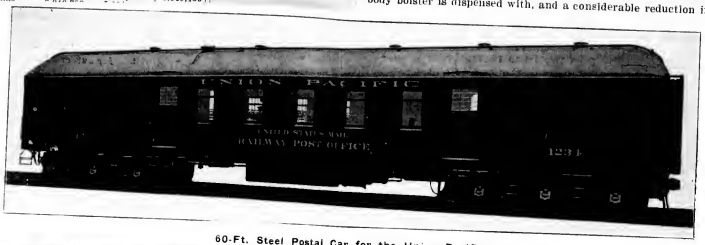

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Dividends	7,999,071	7,998,856	7,476,878
Balance	$2,949,131	$ 1,790,569	$ 4,149,456
Previous surplus	7,046,788	5,256,219	1,106,764
Total surplus	$ 9,995,919	$ 7,046,788	$ 5,256,220

*Equal to 10.94 per cent on $100,000,000 stock.

The general balance sheet, as of July 31, is as follows:

ASSETS.

	1909	1908
Real estate and operat. supplies.	$ 73,254,735	$ 70,257,775
Cash	11,618,522	9,054,319
Invested in securities	10,550,894	10,535,529
Inv. in car associat'ns controlled	809,243	
Manufacturing department	23,251,373	23,251,373
Sundry accounts receivable	3,871,706	3,074,343
Total	$122,665,473	$116,173,339

LIABILITIES.

Capital stock	$100,000,000	$100,000,000
Sundry accounts payable	3,860,707	3,617,527
Reserve for depreciation and adjustment of accounts	8,808,848	5,509,025
Surplus	9,995,918	7,046,787
Total	$122,665,473	$116,173,339

This showing of nearly 11 per cent on the capital stock compares with slightly less than 10 per cent the preceding year. The gross earnings of the company were the largest in its history. In the three years during which the capital stock has been around $100,000,000 the company has been able to pay its 8 per cent as easily as when the stock was $26,000,000 less and has carried a liberal amount to surplus. The present business of the company is thought to be even better than during the fiscal year above reported.

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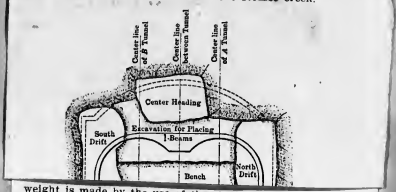

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—The Santa Fe, Prescott & Phoenix Ry. has ordered two cafe parlor cars from the Pullman Co. The cars are for January delivery.

—The Louisville & Nashville is now building four baggage cars, which will be completed this month, in its South Louisville shops and has ordered the building of the following cars at the same place: One combination postal and baggage, one baggage, six non-vestibule coaches and four vestibule coaches. These cars will have steel platforms and steel-underframes.

—The Chicago, Milwaukee & St. Paul has ordered and built in its own shops 357 passenger cars during the past year. The orders were divided as follows: Barney & Smith, 2 buffet-library, 10 mail and baggage, 15 coaches, 1 compartment sleeper, 10 baggage, 10 tourist sleepers, 9 buffet-observation, 18 mail and baggage; Pullman Co., 10 sleepers, 5 diners, 10 coaches, 15 baggage, 1 compartment sleeper, 22 twelve-section sleepers, 20 diners, 4 parlor, 36 ten-section sleepers, 8 tourist sleepers, 20 coaches, 39 coaches; American Car & Foundry Co., 18 baggage, 16 coaches, 11 coaches; Chicago, Milwaukee & St. Paul's shops, 7 postal, 10 baggage, 30 refrigerator express. Of these cars 243 are all-steel cars which have just been ordered and are for 1910 delivery.

RAILROAD AGE GAZETTE
N.Y., FRIDAY, NOV. 12, 1909

The Toledo & Ohio Central has ordered 500 steel underframe, 30-ton, box cars from the Pullman Co., as mentioned in the *Railroad Age Gazette* of October 29. The cars will weigh about 36,000 lbs. and will have the following dimensions: Over-all, length, 37 ft. 7¼ in.; width, 9 ft. 5½ in.; height, 13 ft. 3¾ in.; inside, length, 36 ft.; width, 8 ft. 6 in.; height, 8 ft.

Special Equipment.

Axles	M. C. B., 4¼ in. x 8 in.
Bolsters, body	Steel
Bolsters, truck	Simplex
Brake-beams	Acme (Simplex)
Brake-shoes	Street's (steel back)
Brasses	M. C. B.
Couplers	Sharon
Doors	Side
Door fastenings	National Safety
Draft gear	Miner tandem
Dust guards	McCord
Journal boxes	McCord
Paint	Hardy brown metallic
Roofs	Excelsior outside metal roof
Side bearings	Woods single roller
Springs	Railway Steel-Spring
Trucks	Andrews cast steel side frames
Wheels	33-in. cast iron

The cars will also have steel carlines, Carmer coupler release rigging, and 50 of them will have 8-ft. side doors.

OBITUARY.

Major Thomas H. Hays, former inspector general in the Confederate Army, and at one time second vice-president of the Pullman Palace Car Co., died November 9, at the age of 72 years.

RAILWAY REVIEW
CHICAGO, SAT., NOV. 13, 1909

—The Pennsylvania R. R. advises us that orders have been placed for 96 suburban type, M. P. 54, all-steel passenger cars. The orders were divided up as follows: American Car & Foundry Co., 32 coaches and 18 combination cars; Pullman Co., 30 coaches; Standard Steel Car Co., 16 coaches. These cars were mentioned in the Railway Review on October 16.

RAILWAY AGE GAZETTE
N.Y., FRIDAY, NOV. 5, 1909.

The Toledo & Ohio Central has ordered 500 thirty-ton steel underframe box cars from the Pullman Car Co. The Ralston Steel Car Co. will furnish the underframes.

RAILROAD AGE GAZETTE
DEC. 17, 1909.

The *St. Louis Globe-Democrat* is one of the favorite newspapers of railway men all over the country because of its excellent railway news department. Its comments on railway affairs are usually intelligent and fair. But an editorial it recently printed illustrates how the best-edited publications of general circulation are apt at times to discuss rate matters from a wrong standpoint. It remarked that the sleeping car rate from St. Louis to New York is still the same as it has been for some years, although the running time of trains between the two cities has been much reduced. "Railway expenses have been reduced," it said, "to a one-day basis, but the sleeping car charge is still for three days. Is it not the duty of the Interstate Commerce Commission to look into sleeping car methods and of Congress to investigate and act?" It might easily be shown that while the running time of trains has been reduced there have been heavy increases in the cost of building sleeping cars, due to great advances in the wages of labor and the prices of materials, and to improvements in the cars; and also that there have been large increases in the cost of operating sleeping cars owing to similar causes. On the basis of cost of service, therefore, there is good reason why sleeping car rates should be maintained. But even if the *Globe-Democrat* were right in assuming that the cost of the service has been reduced, that would not be an argument for reducing rates. Which would the editor of the *Globe-Democrat* rather ride in, a car that is hauled from St. Louis to New York in three days, or a car that is hauled there in 24 hours? Obviously, in the latter. Why? Because he will lose less time, which makes fast service an improvement over and more valuable than slow service. But if the *value* of the service to the busy man has increased, with what fairness can it be contended that it should be rendered to him for less money? It may be replied that it is not the sleeping car company but the railway which furnishes the more valuable expedited service. But since the Pullman Company is merely the agent of the railway in furnishing sleeping car service, it would seem that they should be allowed to determine how they will divide the benefit of any reduction in transportation expenses resulting from improvements in service without the intervention of Congress or the Interstate Commerce Commission. The logical application of the *Globe-Democrat's* theory would mean that sleeping car rates between St. Louis and New York, as well as elsewhere, would be the lowest on the fastest trains and highest on the slowest. Everybody would then try to get on the fastest trains. How does the *Globe-Democrat* think that would be liked by those who could not get on the fast trains, and were required to pay a higher sleeping car fare for riding on the slower trains?

The Oklahoma Corporation Commission has ordered a reduction in Pullman sleeping car rates, effective January 1. The berth rate per night is ordered reduced from $2 to $1.50 and seat rates are ordered to be reduced an average of 40 per cent. It is stated that the Pullman Company has agreed to accept the commission's schedule.

RAILROAD AGE GAZETTE
DEC. 10, 1909

The Pullman Company, Chicago, has made plans to build a plant at Detroit, Mich. The company has filed articles of incorporation in Michigan, to include not only the new plant, but all the company's Michigan business.

RAILWAY REVIEW,
CHICAGO, DEC. 11, 1909.

EQUIPMENT AND STRUCTURES.

Cars and Locomotives.

—Equipment orders placed during this year by the Chicago & Northwestern Ry. are given officially below. It is probable that additions to this will be made during the current month as some negotiations are not yet fully closed.

Passenger coaches, 35; chair cars, 12; chair cars with smoking compartment, 8; smoking cars, 10; observation smokers, 2; parlor cars, 6; observation parlor cars, 4; postal cars, 10; combination mail and baggage, 8; baggage, 10; combination postal and baggage, 7; dining cars, 5. All of these are steel cars with the exception of the 7 combination postal and baggage cars, which have steel underframes. All 120 were ordered from the Pullman Co.

THE FINANCIAL AGE.
NEW YORK. DEC 13. 1909

Pullman Car Co.

The Pullman Co. has incorporated a subsidiary company under Michigan law, with $500,000 capital. The parent company is capitalized at $100,000,000.

RAILROAD AGE GAZETTE
FRIDAY, DEC. 31, 1909

The Northern Pacific has ordered 20 first class coaches, 10 tourist sleepers, 15 dining cars, 6 parlor cars and 11 observation cars from Barney & Smith; 20 coaches, 6 combination coach and baggage, 12 mail and express, 20 baggage cars, from the American Car & Foundry Co., and 16 sleepers and 12 tourist sleepers from the Pullman Co. This equipment has been mentioned from time to time in the *Railroad Age Gazette*. Delivery on the American Car & Foundry and the Barney & Smith orders is specified for March, 1910. The 20 coaches and the tourist sleepers ordered from Barney & Smith will be 78 ft. long over all, the dining cars, parlor cars and observation cars 80 ft. The 20 coaches from the American Car & Foundry Co. will be 78 ft. over all, the six combination coach and baggage 75 ft. 9 in., the 12 mail cars 73 ft. 5 in., and the 20 baggage cars 75 ft. 5 in. All of the cars will be wood and the special equipment includes the following:

Bolsters	Commonwealth
Couplers	Chicago Pressed Steel
Heating system	Gold duplex and Gold direct
Lighting system	Oil lamps and dynamo electric
Trucks	Company standard
Wheels	Steel tired, 37¼ in.

According to a press despatch from Columbus, Ohio, a Pullman sleeping car, which was seized by a sheriff at Newark, Ohio, more than a month ago, as security for a claim against the Pullman Company, is still chained to a side track at Newark. It is said that the claim in question was one for clothes which a passenger had lost while on a Pullman car. The Pullman company has now filed suit in the federal court against this passenger and against the sheriff who attached the car.

The Pullman Company has ordered from the Allis-Chalmers Co., Milwaukee, Wis., the turbines and generators for its new plant at Pullman, Ill.

The Tennessee Coal, Iron & Railroad Co., Ensley, Ala., has ordered from the Mesta Machine Co., Pittsburgh, Pa., one 84-in. and one 132-in. Helander condenser.

THE RAILWAY AND ENGINEERING REVIEW
ESTABLISHED JUNE, 1868

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American Supply and Machinery Manufacturers' Association.

The next convention of this association will be held conjointly with the fifth annual convention of The National Supply & Machinery Dealers' Association, on May 11, 12 and 13, at Atlantic City, N. J., with headquarters for both associations at the Hotel Dennis, which has made special rates to delegates and visitors. At the annual meeting held in Jacksonville recently the following resolution was adopted: "Resolved, That a committee, consisting of the incoming president, one member at large to be appointed by the president, and the secretary-treasurer, he appointed, with power to act, to fix upon the time and place of the annual convention of this association, and that the Southern Supply & Machinery Dealers' Association and the National Supply & Machinery Dealers' Association be advised of this action and requested to appoint similar committees to act in conjunction with this committee." President Browning appointed Mr. N. A. Gladding, vice-president of E. C. Atkins & Co., Inc., Indianapolis, Ind., as the member at large referred to in the above resolution, and both dealers' associations have been notified of this action.

Western Society of Engineers.

An extra meeting of this society was held Wednesday, April 20, at 8 p. m., to listen to a lecture by Prof. J. Paul Goode, of the University of Chicago, on European Harbors. There was a large attendance. A joint meeting of the electrical section and the American Institute of Electrical Engineers will be held April 27, when Mr. Wm. B. Jackson will present a paper on "Depreciation and Reserve Funds of Electrical Properties."

Difference of Opinion on Railway Requirements.

Commenting upon the statement of James J. Hill that an insufficient amount of capital is the chief problem of the railroads of the country, or that the insufficiency of trackage and terminal facilities is the greatest menace to the continuance of prosperity, W. C. Brown, president of the New York Central lines, has written the Pittsburg Post, as follows: "Our most serious menace today is not lack of transportation, but lack of production. I can see no such requirement for ocean terminals as does Mr. Hill. We no longer are producing the tonnage that formerly moved long distances to the seaboard, or rather, we are eating it up where it is produced. No doubt, we still need additional terminal capacity at certain interior points, but as things are now, we do not need more terminal facilities at the seaboard. No grain, for instance, is coming to New York or Boston for export. The case is very simple. In the ten years from 1899 to 1909, the area of cultivated land in the United States increased 23 per cent and the volume of agricultural products 36 per cent. That would appear to represent a very fair increase in the average productivity of the land, but the fact is that the difference is largely, if not wholly, accounted for in the large proportion of irrigated land brought under cultivation during the period in question. However, what has the consumption of foodstuffs been doing meanwhile? As represented by population, it has increased by no less than 60 per cent. This failure of production to keep pace with consumption constitutes the real economic crisis of the time. Congress and legislatures and grand juries are busy everywhere investigating the high cost of living. First they blame this and then they blame that, but in every case they have to back back to the one single fact that the country is not producing enough to supply its requirements. The problem is not so much to get more people on the land as to train the people already there to make the land produce what it will and should produce. It is true that we are reclaiming considerable areas, but this recovery is no more than the palm of your hand in comparison with the area already under cultivation."

Railway with Trees to Give Away.

The newspapers state that the Detroit & Mackinac Ry. has for the last five years experimented with a forestry nursery on its Tawas Beach property. At the present time there are on hand trees of the following kinds for transplanting: White pine, Scotch pine, Western yellow pine, spruce and Western white cedar. The company desires to dispose of these trees, and will give them to parties who will plant them and see that they are properly taken care of. The only charge made will be the expense of packing and freight charges from East Tawas to destination. The company especially requests that farmers on and adjacent to the line of the Detroit & Mackinac Ry. make requisitions for these trees for reforesting some of the lands that they have cut over on their farms.

Blockade at the Soo.

Because of a blockade of vessels at Sault Ste. Marie, President William Livingstone of the Lake Carriers' Association is sending out notices to vessel owners setting forth additional regulations for approaching the Soo canal. The blockade is due to the fact that the American locks will not open until May 1 and the capacity of the Canadian locks is overtaxed.

Oil-Burning Engines on the New York Central & Hudson River R. R.

In accordance with a recent order of the public-service commission, the New York Central and Hudson River R. R. has put two of its newly equipped oil-burning locomotives on the Adirondack division and more will be put into service before summer. The change is made to lessen the danger of forest fires. These engines are said to be the only oil-burning locomotives in regular transportation service east of the Mississippi river.

Southern Pacific May Move From Kentucky.

Declaring the valuation of $79,000,000 put upon the franchise in Kentucky of the Southern Pacific holding company to be excessive, Alexander P. Humphrey, counsel for the company, has declared to the Board of Assessment and Valuation at Frankfort that unless the figures are materially reduced the corporation will remove its domicile from Beechmont, Jefferson county, to some other state, probably Maine or Utah.

Railway Club of Pittsburg.

The regular meeting of th Railway Club of Pittsburg was held at the Fort Pitt Hotel, Pittsburg, Pa., Friday, April 22, 1910. Mr. R. L. Kleine, chief car inspector, Pennsylvania Railroad Co., Altoona, Pa., read a paper on "Interchange of Freight Cars on the Basis of Master Car Builders' Rules of Interchange vs. Run, Repair or Transfer."

Western Railway Club.

The regular monthly meeting of the Western Railway Club was held at the Auditorium hotel, Chicago, Tuesday evening, April 19, 1910. The paper for discussion, entitled "Locomotive Headlights," was presented by Prof. C. H. Benjamin, Dean of the Schools of Engineering, Purdue University, Lafayette, Ind. In the paper was given interesting data pertaining to a series of tests made on headlights, at the request of the chairman of the railroad commission of Indiana, the full report of which is being published by the commission.

Limitation of Recovery for Damages by Express Companies.

A court at Washington, Pa., has held that the $50 limitation of the American Express Company on goods destroyed while in the company's care is against public policy. The opinion was rendered in the case of Mrs. Mahel Howard against the American Express Company to recover on goods of the plaintiff, which were destroyed by fire while in the hands of the company. The goods, which had been stored in Pittsburg, had been shipped to Youngstown, where they were burned while in the express company's warehouse. At the trial the company held that its liability was limited to $50 by reason of the conditions attached to the receipt given the plaintiff by the company's agent. The court held that the company was guilty of negligence, and that the receipt given the plaintiff does not limit the plaintiff's right to recover above $50. Judgment was entered in favor of the plaintiff in the sum of $387, as fixed by the jury which heard the case.

Bidding on Panama Canal Work.

Soon after he assumed office last year, Secretary Dickinson directed that no contract be entered into with any corporation which had been adjudged a party to an unlawful trust and monopoly or with any middlemen acting for such concerns. Recently his attention was called to an act of Congress of June 25, 1906, requiring that purchases of material for the Panama canal should be made from the lowest responsible bidder. He submitted to the attorney general a request for an opinion as to whether he could lawfully refuse, therefore, to make an award to the lowest bidder, though that might happen to be a party to an unlawful trust. The attorney general rendered an opinion answering the question in the negative, so the secretary of war has instructed the purchasing agent of the Isthmian canal commission accordingly.

Valuation of Railroad Property in New Jersey.

The Legislature of New Jersey has appropriated $100,000 to continue the work of appraising the value of railroad property in that state, which was discontinued some time ago on account of lack of funds. The new reappraisal law, while legislating out of office the three commissioners who began the work, is considered a far stronger measure than the original joint resolution, in that it places the

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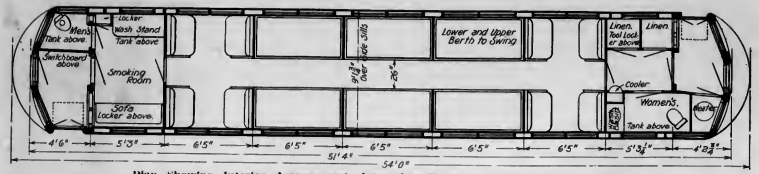

Plan Showing Interior Arrangement, Interurban Sleeping Car, Illinois Traction System.

work under the supervision of the state board of assessors, while at the same time directing that the reappraisal shall be made by one of the original three appraisers, to be chosen with the approval of the governor. It is stated that Mr. Charles Hansel is to be named, and the act gives him complete power, so far as the hiring of his assistants is concerned. The fact that the work is to be under the supervision of the assessors, however, is what is considered of the greater importance, for it is held that when the reappraisal is completed the state board must accept the figures obtained, whereas, under the old resolution this was not compulsory. Another important provision of the new act is that the board shall have the powers and execute the duties prescribed in Joint Resolution No. 3 of last year, under which the original commission was named. Now, this resolution provided that the reappraisal must be made under the direction of the governor, so that while the assessors will have a nominal supervision of the work, they will have just enough to do with it to compel them to accept the result of it.

Damages for Injury to a Blind Passenger.

The supreme court of Colorado has confirmed a verdict for $1,000 damages awarded by a jury in the case of Robert J. Derry of Ouray against the Denver & Rio Grande Railroad. Plaintiff is blind and this was known to the trainmen. When he transferred to a Pullman car on a sidetrack they guided him to the porters who helped him only onto the platform. There he turned the wrong way, and instead of entering the vestibule, walked off the car, one of his arms being injured in the fall. Derry was traveling on a pass, but the court held that this was no bar to the liability of the railroad, and that the Pullman porter was one of the train crew.

Irrigation Engineering Exhibit.

In the office of the Settlement Agent of the United States Reclamation Service, Room 802, Federal Building, Chicago, there are now installed a number of transparencies illustrating actual scenes on the various irrigation projects undertaken by this Service throughout the West. These pictures were on exhibition in Seattle during the Alaska-Yukon-Pacific exposition, and later at the Coliseum Land Show in Chicago, but are now made a permanent feature of the Reclamation Service office in Chicago. It being impossible, from lack of space, to put all of these on display at one time, they will be changed occasionally and new ones shown to the callers. The public is invited to call at the office to view this exhibit.

New Sleeping Cars for the Illinois Traction System.

The Illinois Traction System has put into service on its interurban electric road between Peoria, Ill., and East St. Louis, Ill., two sleeping cars of a new and interesting type. These cars were built by the American Car & Foundry Co., in its plant at St. Charles, Mo., and the original features of the design are the product of H. E. Chubbuck, general manager of the road, and J. M. Bosenbury, superintendent of motive power and equipment.

Perhaps the most conspicuous feature is the turtle-back roof. The accompanying illustrations show that the clear story or monitor deck construction is eliminated. The advantages from the structural standpoint can readily be appreciated, the unbroken carlines allowing lighter and more substantial construction. The exterior appearance is not so different from the standard as might have been expected, and probably would prove to be not unduly objectionable, after the type had become more familiar. The illustration also shows that an additional row of windows has been added, making a long narrow sash in line with and above each of the larger windows. This row of windows is for the purpose of giving light and air to the occupant of the upper berth, and in that respect is a decided though worthy innovation.

The plan drawing reproduced herewith shows the interior arrangement of the car. The center aisle is 26 ins. wide, and the berths are arranged in ten sections. Each pair of sections is set off from its neighbor by a bulkhead of solid mahogany, extending clear across the car, and pierced for the aisle by a door 7 ft. high. These cross partitions serve to stiffen the car materially. All berths are 37 ins. wide; the top of the lower berth is 18 ins. above the floor, and the head room between the upper and lower berth is 36 ins.

The two sections at each end of the car are fitted differently from the interior sections. The end compartments are equipped with upper and lower berths of the National Sleeping Car Co. In the day time these sections are made up into seats similar in appearance to those of a Pullman car. At night the seat cushions slide together in conjunction with two auxiliary cushions stored during the day time, to form a lower berth with deep springs. The seat backs are hinged at the top and swing upward to form the upper berth. Thus one of the sections at night has the appearance of a Pullman section, while in the day time the mattresses and pillows are stored in boxes underneath the seat cushions.

The six compartments in the middle of the car are fitted with upper and lower berths of a type original with the designers of the car. These berths are so arranged that when not wanted for occupancy, they may be swung up and locked against the sides of the car. It is not intended that passengers shall be assigned to these compartments except during sleeping hours. The two berths in each section occupy the full length of 6 ft. 5 ins. between the cross partitions. Each berth is hinged to the side framing of the car, and its weight balanced so that it may be folded up against the windows. No seating is provided in the space, except folding chairs which become available when the berth is lifted. It will be noted, however, that when the berth is raised, the passenger has the entire floor space and the full hight up to the upper berth for his convenience in dressing. The fittings of each berth are removable so that they can be carried outside for thorough cleaning and airing at the end of the run. The lower berth has removable spring frames, and each berth is provided with two feather pillows, two Pullman blankets, and duplicate sets of linen. The usual hammocks and head and foot baskets are provided for the reception of the clothing at night, and the section is shut off from the corridor at night by the usual long curtains carrying the berth numbers. A berth of this type is made ready during the day, and folded against the wall, so that when the passenger wishes to retire it is ready instantly.

The men's smoking room, at one end of the car, occupies the full width of the car, and is 5 ft. 3 ins. long. The fittings of this room include a two-

New Type of Interurban Sleeping Car, Illinois Traction System.

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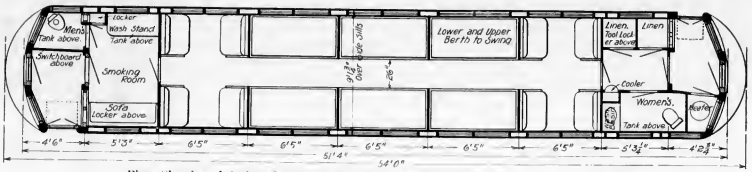

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The two sections at each end of the car are fitted differently from the interior sections. The end compartments are equipped with upper and lower berths of the National Sleeping Car Co. In the day time these sections are made up into seats similar in appearance to those of a Pullman car. At night the seat cushions slide together in conjunction with two auxiliary cushions stored during the day time, to form a lower berth with deep springs. The seat backs are hinged at the top and swing upward to form the upper berth. Thus one of the sections at night has the appearance of a Pullman section, while in the day time the mattresses and pillows are stored in boxes underneath the seat cushions.

The six compartments in the middle of the car are fitted with upper and lower berths of a type original with the designers of the car. These berths are so arranged that when not wanted for occupancy, they may be swung up and locked against the sides of the car. It is not intended that passengers shall be assigned to these compartments except during sleeping hours. The two berths in each section occupy the full length of 6 ft. 5 ins. between the cross partitions. Each berth is hinged to the side framing of the car, and its weight balanced so that it may be folded up against the windows. No seating is provided in the space, except folding chairs which become available when the berth is lifted. It will be noted, however, that when the berth is raised, the passenger has the entire floor space and the full hight up to the upper berth for his convenience in dressing. The fittings of each berth are removable so that they can be carried outside for thorough cleaning and airing at the end of the run. The lower berth has removable spring frames, and each berth is provided with two feather pillows, two Pullman blankets, and duplicate sets of linen. The usual hammocks and head and foot baskets are provided for the reception of the clothing at night, and the section is shut off from the corridor at night by the usual long curtains carrying the berth numbers. A berth of this type is made ready during the day, and folded against the wall, so that when the passenger wishes to retire it is ready instantly.

The men's smoking room, at one end of the car, occupies the full width of the car, and is 5 ft. 3 ins. long. The fittings of this room include a two-

New Type of Interurban Sleeping Car, Illinois Traction System.

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End View, Illinois Traction System Sleeping Car.

basin washstand with open plumbing, a nickel-plated water cooler, a large mirror, lockers for linen supply, and a leather-upholstered seat 5 ft. long, with lockers below. A door from one corner of this room leads to a toilet room approximately 4 ft. square, fitted with a Duner flush hopper, with wall pull. The water supply is carried in tanks above a false ceiling at the sides of the car.

At the opposite end of the car is the women's toilet occupying a space 6 ft. 3 ins. long on one side of the center aisle. At the platform end of this room is a heater compartment, about 3 by 3 ft. in size, lined with sheet metal and enclosing a No. 1 C Peter Smith car heater. The coal is carried in a box cellar underneath the car framing. The radiation consists of two rows of 2-in. pipe on each side of the car. At this end of the car and opposite the women's compartment, are two linen lockers each 2 ft. 6 ins. square and extending to the hight of the deck rail, with a tool locker opening onto the corridor built above.

The general dimensions of the car body are as follows:

Length over buffer plates	54 ft. 0 ins.
Length over vestibules	51 ft. 9¼ ins.
Width over side sills	9 ft. 1¾ ins.
Width over siding	9 ft. 3 ins.
Hight between sills and plates	7 ft. 3 ins.
Hight over roof boards	9 ft. 4 13/16 ins.
Hight from rail to bottom sill	3 ft. 5 ins.
Hight over all	12 ft. 9 13/16 ins.

The underframe main members are four 6-in. I-beam center and intermediate sills, with 2¾ by 6½-in. yellow pine subsills, and side sills made up of 4¼ by 7¾-in. yellow pine pieces joined to ⅜ by 18-in. steel plates extending the full length of the car. The center and intermediate sills extend into the wooden bumper blocks and are anchored thereto with 5 by ½-in. angle plates fastened with ⅝-in. bolts. The overhang of the car is 11 ft. 7 ins. from king pin to face of bumper. The body bolsters are of the built-up type made of top and bottom plates 12 x 1⅛ ins. in section. The truck center distance is 30 ft. 10 ins. and the car is 54 ft. long over buffers. The cross-framing is so arranged that a free space of 12¼ ins. wide is left between the center sills from end to end of the car, except where cast spacing blocks are placed. These

View in Smoking Room, Interurban Sleeper.

blocks have an opening through their web, and thus provision is made for a straight run of the wiring conduit under the middle of the car. The over-all width of the underframing is 9 ft. 1⅝ ins.

A wooden floor 13/16 in. thick is laid on top of the sills. Above this is a second wooden floor of the same thickness, supporting a wearing surface of Asbestolith, ⅜ in. thick. This surface extends from side to side of the car, and is given a fillet at the edges to prevent the collection of dirt. The space between the center and side sills is packed with a layer of mineral wool 2½ ins. deep, held in place by a false floor. The entire underframing and floor have a depth of 7¾ ins. This elaborate floor construction, including four wooden floors, one of composition, and a layer of deadening material, is provided for the purpose of minimizing the noise from the running gear.

The side framing of the car is of wooden construction and below the window rail has a continuous blocking 1¼ ins. thick. On the interior, the sides of the car are straight from the floor level to a hight of 7 ft. 5½ ins. The rise from this elevation to the ceiling is 11 13/16 ins. The width of the car over eaves is 9 ft. 5¾ ins. and the hight from the bottom of sill to top of roof is 9 ft. 4 13/16 ins. The windows are 25 7/16 ins. above the floor, and the lower window opening is the same distance in hight. The distance between the top of the lower window and the lower sash of the upper window is 15 ins., and the upper windows have a clear opening of 10 ins. The

View Down Center Corridor.

sides of the car above the window rail are made up of window sections 5 ft. 3½ ins. wide, enclosing two lower and two upper sash, and blocked by posts 20¼ ins. wide. A 2¼-in. mullion divides the window section vertically. The blocking in the posts between the windows is 13/16 in. thick, and is fitted between the ½-in. rods which tie the deck rail to the side framing. A lateral member extends from end to end of the body between the upper and lower side windows, tying the posts and window structure together against longitudinal movement. Steel roof carlines are placed on 4-ft. 8-in. centers, and between each pair of these are four ash carlines. All wood carlines are 1½ ins. thick and the steel carlines are ½ by 1¾ ins. in section. The steel carlines are anchored to the vertical tie rods which pass through the side framing and through the end framing of the car. The carlines are 14 13/16 ins. high above the deck rail.

These cars are to be operated as trailers, and for that reason no motor equipment is provided.

End Sections, National Sleeping Car Co. Equipment.

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End View, Illinois Traction System Sleeping Car.

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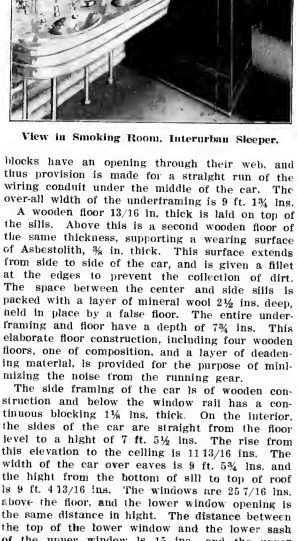

View in Smoking Room, Interurban Sleeper.

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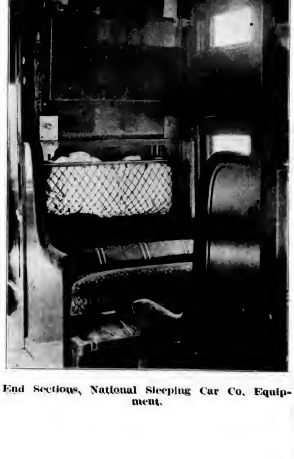

End Sections, National Sleeping Car Co. Equipment.

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Wheel base	7 ft.
Journal centers	6 ft. 3 ins.
Truck frame	10 ft. 7 ins. by 6 ft. 6 ins.
Frame material, two pieces	8-in. channel
Bolster springs	36 ins.
Equalizer springs, double coil	7¼ ins.
Equalizer bars	6 ins. by 2 ins.
Wheels, Midvale, rolled steel	35 ins.
Journal boxes, Symington, M. C. B.	4½ by 8 ins.
Transoms	8-in. channels
Dust guards	Security
Brake beams	Inside hung, I-beams

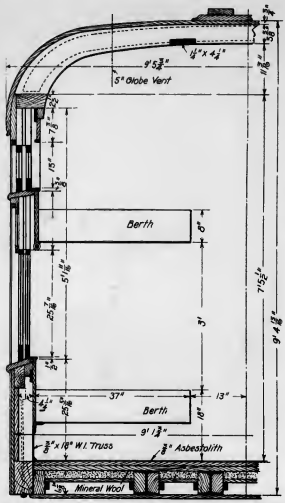
The air brake equipment is Westinghouse AMS, automatic, with 12-in. cylinders.

Being without the usual deck sash, it was advisable to install a complete ventilating system. Five-inch ventilators with exhausters are inserted in the roof over the full length of the car. Each ventilator terminates in a brass ring in the ceiling. This ring is provided with a shutter, held in place by a spring, so that a slight tension is necessary to adjust the ventilator opening. There are two such ventilators in each section, arranged over the center line of the berth, and similar ventilators are installed in each toilet and smoking room.

The car is illuminated by means of a generous number of 8-c. p., 32-volt spherical incandescent lamps. These are supplied with current from a Gould storage battery carried in a case under the car. Connection to the trolley circuit is provided for charging the batteries through resistance. The lamps for the general illumination are located in a cluster of three on the ceiling of each section. Two individual lights are provided for each berth, these being installed in statuary bronze pockets set flush with the woodwork. These fixtures are manufactured by the Adams & Westlake Co. The lamp is mounted as a part of the swinging cover to the pocket; on pressing a button the pocket door is opened by a spring and the lamp automatically cut into the circuit.

The novel features in the design and construction of the car itself, outlined above, were not the sole reliance in planning the attractiveness of this

Middle Sections, Berths Lowered for Occupancy.



Section of Car Body, Illinois Traction System Sleeper.

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The School of Mines of North Dakota is installing a briquetting plant for lignite, with a capacity of two tons per hour and a complete gas plant of the latest type with automatic recording apparatus for temperatures, pressures, etc., together with a most complete laboratory for coal and gas analysis and testing.—Power and the Engineer.

Waterproofed Bridge Floors.*

Chas. Churchill (Chief Engineer, Norfolk & Western Ry.): We have not done much in the way of waterproofing masonry. Figure 1 shows what we did in one case. We had here no special head of water—merely that due to falling rain. The materials were furnished by the Standard Asphalt & Rubber Co. of Chicago. The condition of the bridge floors is good at present. We are apprehensive that the ballast may be forced eventually through the casting, and would prefer a top layer of brick where the space is sufficient to admit it, to avoid this contingency.

O. E. Selby (Engineer Bridges and Structures, C. C. C. & St. L. Ry.): The work we have done has consisted mostly of waterproofing ballasted bridge floors over streets in and near Indianapolis, in connection with track elevation. We have built eight structures of this kind. The floor in every case consists of transverse I-beams covered with a reinforced concrete slab about 4 ins. thick. On top of this is placed the waterproofing, consisting of four or five layers of wool felt, cemented with pitch or asphalt. Figures 2 and 3 show the construction of the floor and waterproofing at West Washington street and National road. These are the latest examples, and are better in some details than the earlier work.

As to the results obtained, they have been uniformly satisfactory. This does not mean that there have been no leaks, but that the leaks which have occurred have not been sufficient to affect the dryness of the streets underneath or seriously affect the durability of the steel work. The West Washington street bridge has been in service about two years and has no leaks whatever. The National road bridge has five or six places where drops of water come through, mostly at points over the bents. The Kentucky avenue bridge has about the same number of leaks, similarly located. The Massachusetts avenue bridge has more leaks than any other, because this was the first one done and details for joining the waterproofing to the girders and the stiffeners were not as good as those adopted later. Kentucky avenue bridge, Chicago Division, has a number of leaks sufficient to show white on the iron work. These are the result, apparently, of the complicated nature of the de-

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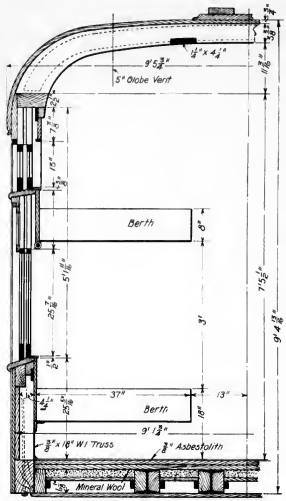

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FRIDAY APRIL 29. 1910.

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The real student is the real practical man. There are plenty of similar instances, and on a larger scale. A. H. Joline, a great railway lawyer, Judge Lovett and Judge Gary found themselves immediately qualified for presidential work. Younger professional men, such as W. D. Hines, of the Atchison, and Roberts Walker, of the Rock Island, have shown how quickly the thorough student can become the great administrator. The list of examples might be extended indefinitely to illustrate to young men that a life devoted to purposes of knowledge, usefulness and health is better than aiming at money or fame, and that orderliness, persistence, industry, a full quota of recreation and an avoidance of idleness are pretty good qualities to keep an eye on.

W. H. BOARDMAN.

NEW STEEL PULLMAN SLEEPING CAR.

The Pullman Company has already furnished a number of the steel sleeping cars to be used by the Pennsylvania Railroad when it opens its service through the tunnels into New York City. Four hundred and eighty-seven steel cars, including sleeping, parlor and observation cars, are being built for use on the Pennsylvania for Pullman service. The dining cars for the tunnel service have been built by the railway at its Altoona car shops; many of the steel coaches and mail cars have been in service more than a year.

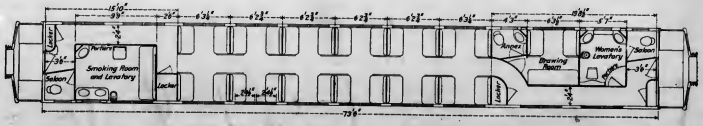
Since the first steel sleeping car, "Jamestown," was built in 1907 a number of changes and improvements have been made in the designs so that the weight has been reduced to 137,200 lbs. The new sleeping cars are 73 ft. 6 in. long over end sills, and the underframe without fixtures weighs 27,000 lbs.; the two trucks weigh 40,000 lbs., leaving 70,000 lbs. for the weight of the upperframe, brakes, drawbars, buffers and all finish and fixtures. The sides are covered with metallic sheathing, whose chief merit is the ease with which it can be repaired and painted. The roof is made of steel sheets with expansion joints which are flanged upon each side of a carline rib and covered with a U-shaped cap on the outside.

The underframe is a combination of large steel castings,

Interior View of Steel Sleeping Car.

which form the end portions from the body bolsters to the end of the platforms, and structural steel girders forming the center sills which are the main compression members. The

Pullman Steel Sleeping Car for Use on the Pennsylvania.



Plan of Pullman Steel Sleeping Car for Use on the Pennsylvania.

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W. H. BOARDMAN.

NEW STEEL PULLMAN SLEEPING CAR.

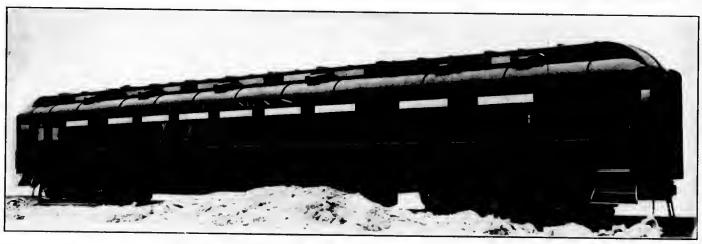
The Pullman Company has already furnished a number of the steel sleeping cars to be used by the Pennsylvania Railroad when it opens its service through the tunnels into New York City. Four hundred and eighty-seven steel cars, including sleeping, parlor and observation cars, are being built for use on the Pennsylvania for Pullman service. The dining cars for the tunnel service have been built by the railway at its Altoona car shops; many of the steel coaches and mail cars have been in service more than a year.

Since the first steel sleeping car, "Jamestown," was built in 1907 a number of changes and improvements have been made in the designs so that the weight has been reduced to 137,200 lbs. The new sleeping cars are 73 ft. 6 in. long over end sills, and the underframe without fixtures weighs 27,000 lbs.; the two trucks weigh 40,000 lbs., leaving 70,000 lbs. for the weight of the upperframe, brakes, drawbars, buffers and all finish and fixtures. The sides are covered with metallic sheathing, whose chief merit is the ease with which it can be repaired and painted. The roof is made of steel sheets with expansion joints which are flanged upon each side of a carline rib and covered with a U-shaped cap on the outside.

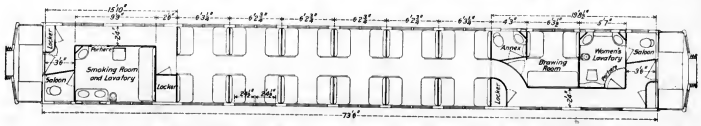
The underframe is a combination of large steel castings,

Interior View of Steel Sleeping Car.

which form the end portions from the body bolsters to the end of the platforms, and structural steel girders forming the center sills which are the main compression members. The



Pullman Steel Sleeping Car for Use on the Pennsylvania.



Plan of Pullman Steel Sleeping Car for Use on the Pennsylvania.

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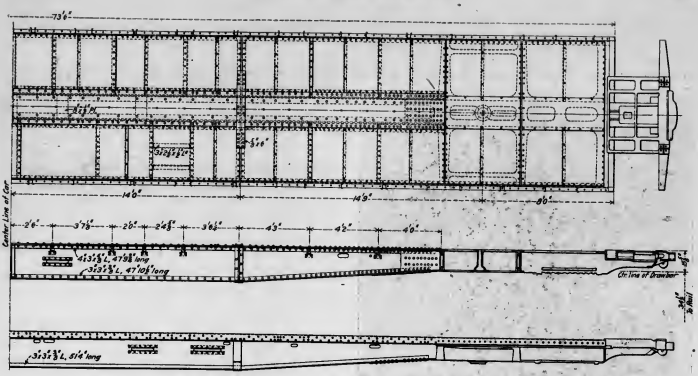
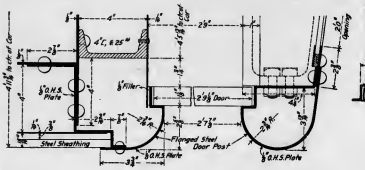
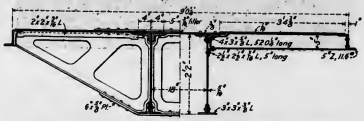


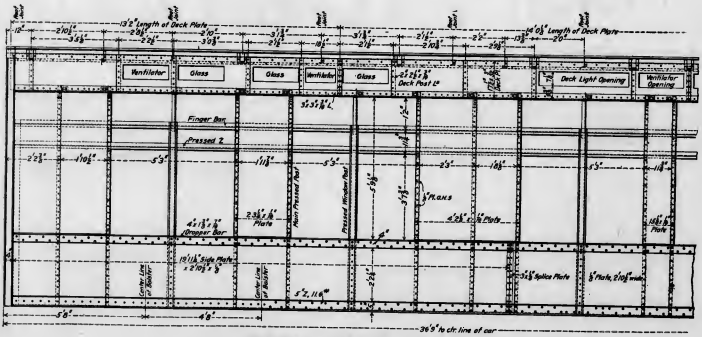
Plan and Elevations of Underframe of Steel Sleeping Car.



Body and Vestibule Corner Posts.



Sections Through Underframe of Steel Sleeping Car.



Side Framing of Steel Sleeping Car.

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steel casting forms in one piece the double body bolster, the end sill, the platform with cored pockets for the buffer springs and the buffer beam. The center sills are deep fish-belly girders with a cover plate on top and are 26 in. deep at the center and 16 in. deep at the ends. They are built up of

Smoking Room of Steel Sleeping Car.

⅜-in. web plates with 3 x 3 x ⅜-in. angles forming the lower flanges and 4 x 3 x ⅝-in. angles for the top flanges. The cover plate is 30 in. wide and ⅝ in. thick. Between this and the side sills there is a solid steel floor plate ⅜ in. thick. The two main crossbearers have cast steel fillers; the shape and construction of these are plainly indicated in the view of the cross-section of the underframe. The side sills are 5-in. Z-bars, 11.6 lbs. per foot, and form the lower flanges of deep girders which include the side plates below the windows. These plates are 2 ft. 10½ in. deep and ⅛ in. thick; the top flange at the window sill is an angle 4 x 1⅝ x ⅜ in. These deep girders, as well as the remainder of the steel side construction are designed to carry a large portion of the load.

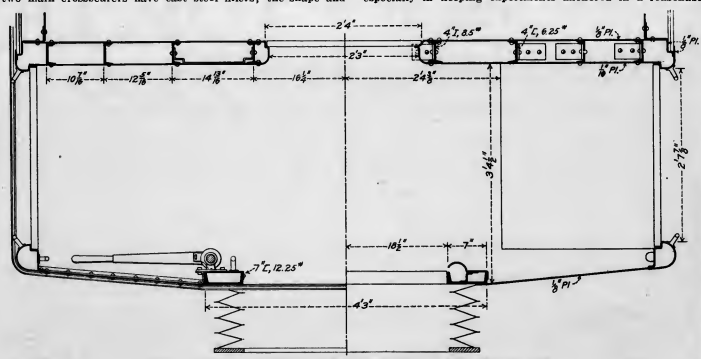
The posts are pressed steel and extend from the floor to the main plate. The plate is an angle 3 x 3 x ⅜ in., and it completes the side construction, the upper and lower deck forming a separate construction which is built complete on the shop floor and then raised in position and riveted on.

The end walls and platform construction have been worked out in a very substantial manner and details of this portion of the car are included in the illustrations. The end door posts are 4-in. I-beams, 8.5 lbs. per foot. The corner post and two intermediate posts in the end wall are 4-in. channels, 6¼ lbs. per foot. The entrance door casings at the steps are ⅛-in. steel plate flanged closely to the shape of the present wooden casings; these also are shown in detail.

The buffing device is the Forsyth patent and the Waugh friction draft gear is used in connection with it. The interior arrangement of the car is shown in the floor plan. It contains 12 regular Pullman sections, 1 drawing room, women's lavatory and men's smoking room and lavatory, the latter being 9 ft. 9 in. long. The inside finish is entirely of metal with the exception of the sash and seat arms. The berth fronts and side panels are painted in imitation of mahogany, and the general appearance of the interior of the car is similar to that of cars finished in wood.

HENRY JOHNSON.

Henry Johnson, who was one of the early leaders in railway signaling in America, and who was a pioneer in England as well, died at his home, "Hazelmere," Rahway, N. J., April 5, at the age of 72; and this department of the railway world has lost its Nestor. Mr. Johnson had a prominent place in the development of the signaling art in Great Britain and then came to this country in time to do fundamental work here also. English ideas have borne a prominent part in the establishment of the science of signaling in the United States, especially in keeping experiments anchored in a reasonable



Section Through Vestibule and End Framing of Steel Sleeping Car.

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Page 76C
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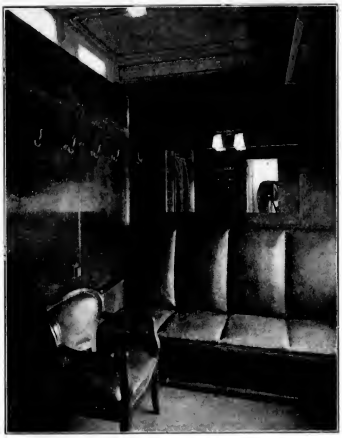

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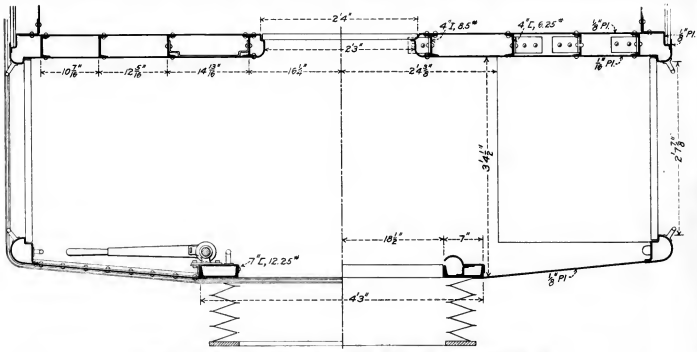

Section Through Vestibule and End Framing of Steel Sleeping Car.

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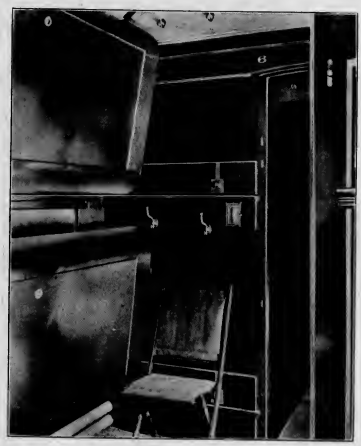
CHICAGO.
May, 1910.
VOL VIII, No. 5.
$2.00 PER YEAR.

New Ideas in Sleeping Cars

ILLINOIS TRACTION COMPANY EARNS DISTINCTION IN VARIOUS WAYS

PROGRESS, and originality in construction and operation of sleeping cars are marked characteristics of the new sleeper service that has just been established by the Illinois Traction Company on its line between St. Louis, Mo., and Peoria, Ill.

The Illinois Traction Company has achieved some distinction, it is true, by being the first electric road to provide sleeping car service, but its progressive and creative spirit are even more clearly shown in the nature of the service and the character of the cars themselves. These are distinctly different in many ways from any other sleeping car, and a greater number of the points of difference are of a character to commend them to patrons of the road as improvements when compared with the accommodations to be found in the sleeping cars used by the steam railroads.



View of interior section of Illinois Traction Company's new type of sleeping car showing berths closed up against side wall of car for convenience of passenger in dressing.

View of end section of Illinois Traction Company's new type of sleeping car showing windows of upper berth and other original features of construction.

There are two of the new sleeping cars, the "Peoria" and the "St. Louis." They were built in the shops of the American Car and Foundry Company at St. Charles, Mo., but credit for their novel features is due to H. E. Chubbuck, general manager, and J. M. Bosenbury, superintendent of motive power and equipment for the Illinois Traction Company. They devised the plans for the cars and supplied the designs.

The points of originality in car construction that are most striking and will appeal most particularly to the traveler are windows in the upper berths through which an occupant may obtain air and a view of the outside world, berths that are six inches longer than the regulation Pullman berth, an arrangement whereby a lower berth may be tipped on edge so that it will lie flat against the side wall of the car and leave a state room with free floor space in which the occupant can dress with comfort, a wall safe in each berth with a double Yale lock, which cannot be opened except by the use of two keys, one of which is carried by the conductor and the other by the passenger holding the berth.

Marked innovations in the service are a breakfast of hot coffee and rolls with butter, that is served to each passenger, and the fact that the company pays its porters and other attendants ample wages and requests its patrons not to tip these employes. Another agreeable feature of the service is that an upper berth that is not sold is not made up, and the passenger occupying the lower berth has the benefit of the additional head room and breathing space.

Illinois Traction Company First

The first sleeping car service ever furnished by an electric railway was established by the Illinois Traction Company about two years ago, over the 95-mile division of its system between Springfield and East St. Louis, Ill. But the cars placed in service then were built for another road, that never was able to use them, and they were accepted as they stood. It was not until the cars were built for the St. Louis-Peoria line that the management of the Illinois Traction Company had opportunity to demonstrate its own ideas in sleeping car construction.

The new service was put in operation within the last

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CHICAGO.

May, 1910. PUBLIC SERVICE MAGAZINE 155

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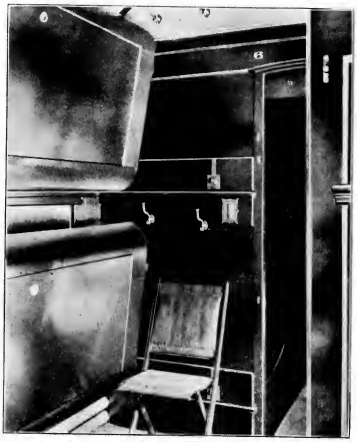

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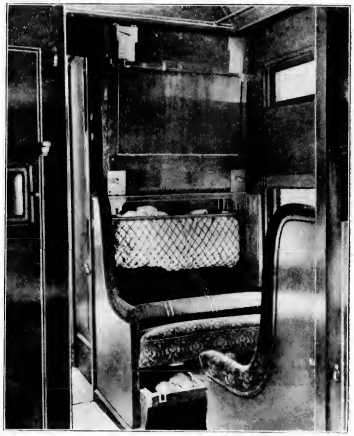

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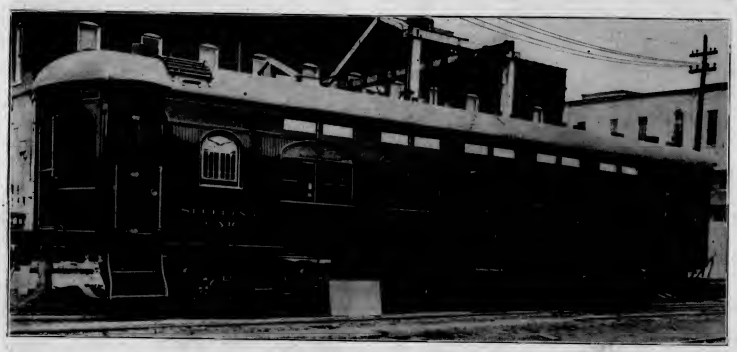
In exterior appearance the new type of sleeping car is remarkable chiefly for its turtle-back roof, and it is understood that these are the first big cars for interurban service in which that form of construction has been followed. The absence of the monitor deck has made a new plan of ventilation necessary, but this it is asserted is fully as effective as the old and in some ways more satisfactory.

The older sleeping cars operated by the Illinois Traction Company carried their own motive power, but the new ones will be operated as trailers, thus relieving the passengers of the annoyance of the noise and vibration caused by the motors.

The "Peoria" and "St. Louis" are 51 feet 4 inches long including the vestibules and 9 feet 3 inches wide. Each car has ten upper and ten lower berths 37 inches wide and 6 feet 5 inches long. At one end of the car is a men's lavatory and smoking compartment which is the full width of the car and 5 feet 3 inches in its other dimension. The women's lavatory is at the other end of the car, and although it is 6 feet 3 inches long it occupies space only on one side of the middle corridor of the car which is 26 inches in width.



Exterior New Sleeping Car of Illinois Traction System.

Peculiarity of Construction

One peculiarity of construction is that the entire car is divided into compartments with permanent cross-partitions or bulkheads which divide each pair of sections from its neighbors, with only an opening for the continuation of the corridor. These partitions stiffen the car body and are an advantage in case of accident.

The compartment at each end of the car is equipped with berths similar in most respects to those in the ordinary sleeping car, but the others are all constructed strictly according to the special plans devised by Messrs. Chubbuck and Bosenbury. In these plans particular attention has been given to the questions of cleanliness and sanitation, and the construction of the berths is such that their different parts may be removed easily and taken out of the car to be cleaned and aired. When the berths are made up each section is shut off from the aisle by long curtains of the kind customarily found in sleeping cars and in addition to that each berth has curtains of its own.

The fare on these sleepers is the same that is charged on the Pullman cars operated between the same points except that a reduction of 25 cents is made for an upper berth. Thus the rate for a lower berth is $1.50 and for an upper, $1.25.

W. T. CARBUSER is successor to S. S. Straub as superintendent of the Schuylkill & Dauphin Traction Company, Harrisburg, Pa.

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HARRY G. LOUSER, of Lebanon, Pa., has been elected president of the Reading Transit Company, the new operating corporation that has leased the Reading and Lebanon and other electric railway and power companies of the United Traction Company.

JAMES K. GRAY, formerly superintendent of the Cleveland & Columbus Railroad Co., has accepted a position with the Illinois Traction Company at Decatur, Ill.

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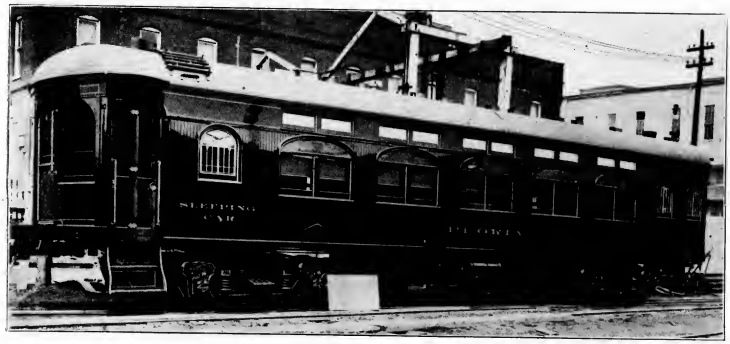

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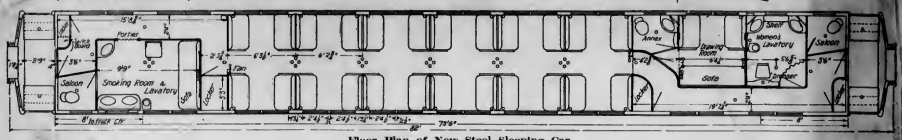
Porter
Buffet
Smoking Room & Lavatory
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Serving Room
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Women's Lavatory
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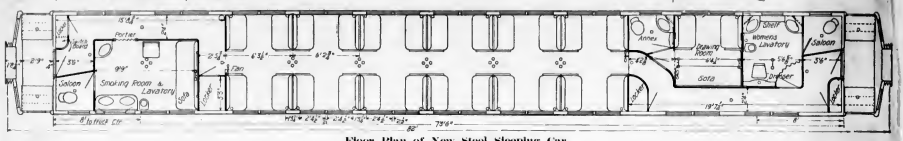
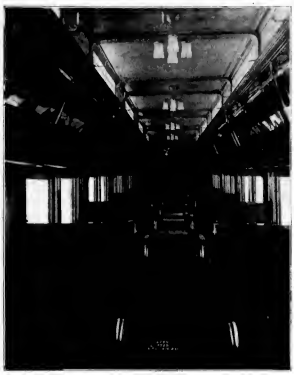


Floor Plan of New Steel Sleeping Car.

foundry laboratory, and I have observed that the manufacturers who are making the highest quality of goods in a business-like manner are foremost in utilizing this department. Could the practical foundryman be made to realize that a technical man makes his own position more valuable and that co-operation vastly increases his own usefulness, a great step forward would be taken in this ancient and intensely interesting industry.

The New Steel Sleeping Cars Built by the Pullman Co.

After a most exhaustive study of the question including the construction of several experimental cars, the first of which was the Jamestown, the Pullman Company is busily engaged in turning out the first large lot of steel sleepers, built in accordance with the finally adopted standards. A total of 361 of these cars are to be built in the initial installment, which, together with about 125 steel parlor and observation cars, will be placed in service on the Pennsylvania Railroad as rapidly as completed. The cars are being turned out at the average rate of two cars per day.



Interior of New Steel Sleeping Car.

In general external appearance and interior arrangement, these cars are quite similar to the standard wooden parlor and sleeping cars with which the public has long since become familiar, influenced not only by the necessity for a fire proof construction wherewith to meet the requirements of service in the New York tunnels, but by the many advantages that have come to be recognized in steel passenger equipment as well, the details of these cars represent much that may be at present considered the highest development of the car builders art.

The main car body is 9 ft. 10 ins. wide by 73 ft. 6 ins. long, the length over coupler faces being 82 ft. The total weight, as compared with that of the "Jamestown," has been very materially reduced, these cars weighing slightly more than 140,000 pounds, of which 40,000 pounds represents the weight of the trucks. As in the cars previously built, dependence is placed on a very strong center sill construction for carrying the load and for resisting the pulling and buffing shocks. The center sill consists of a pair of 5-16 in. fish belly plate girders 26 in. deep at the mid-section and 52 ft. 10 in. long, riveted at either end to a large steel skeleton casting, which in addition to comprising the entire under frame and platform structure for a distance of 10 ft. 4 in. from either end, involves the body bolster and centerplate bearing, and provides the housing and connections for the draft and buffing apparatus. The top flanges of the center sill girders are made of 4x3x⅝ in. angles over which a ⅜ in. cover plate 30 ins. wide is riveted. The bottom flanges consist of 3x3x⅜ in. angles without coverplate. The girders are spaced 18 in. apart.

The side sills consist of 5 in. x 11.6 lb. Z bars, supported at each end by the end frame castings above referred to, and at two intermediate points by the main crossbearers composed of triangular steel castings on either side of the frame with a cast steel filler between the girders of the center sill. In addition to being riveted, a ⅝ by 6 in. tie bar secured to the under side of the cross bearer castings serves to bind those parts firmly to the center sill. Disposed at frequent intervals between the side and center sills are ¼ in. pressed steel shapes which serve both to stiffen the side sills and to support the 1-16 in. steel plate on which the flooring is laid. This latter consists first of a 1 in. layer of hair felt on top of which is placed keystone flooring which serves as a base for the ⅝ in. flexolith finish.

The side construction of the car is made up of a ⅛ in. plate girder 2 ft. 11¼ in. deep, riveted to the web of the "Z" bar side sill and having riveted along its upper edge, a 4 in.x1⅜x7-16 in. drop per bar. The posts are pressed from ¼ in. steel plate and conforming to the contour of the roof, extend from the point of support on the outwardly extending flange of the side sill, to the 3x3x3/1(in. angle plate serving as the junction between the upper and lower decks. The upper deck structure consists of a series of 2½x2x3-16 in. pressed steel deck posts resting on the angle above mentioned and supporting the 1-16 in. pressed steel carlines. The roof of the upper deck is of No. 14 gauge steel plate, while that of the lower deck is No. 16. In each case ⅜ in asbestos and hair felt insulation is used, the headlining of both consisting 3-16 in. agasote, a non inflammable composition board introduced into this country from England by the Pantasote Company. By the use of interlocking steel sheathing below the belt rail and between the windows a very pleasing effect is secured. This sheathing provides a cellular air chamber insulation, is readily applied and easily kept clean. The main panels are first riveted on after which the insert strips are dipped in a mixture of oil and color and driven into position, completely hiding the heads of the rivets or screws, so that the method of fastening is no way discernible on the exposed surface. The perfect fit, together with the hardening of the oil and color, seals the insert slats secnrely in position. The sheathing is backed

Interior of Smoking Room and Lavatory, New Steel Sleeping Car.

New Steel Sleeping Car Built by the Pullman Company.

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up and the plate girder is lined with ⅜ hair felt and asbestos insulation such as is used in the upper and lower decks, producing a structure light in weight, simple in construction and one that affords the maximum resistance to the passage of heat and cold through the walls of the car. By retaining wooden window ledges and by the use of an agasote lining extending 18 in. below the window ledges, passengers are relieved of all necessity of contact with metallic parts, which has been found to be the source of much of the discomfort from riding in steel cars in cold weather. One-half in. agasote section partitions being employed, the use of wood has been restricted entirely to the window sash up to the window ledges as mentioned, these parts with the upholstery being practically the only inflammable materials entering into the construction and finish of the cars.

Lighting is effected by the use of the axle generating system in some cases and by the use of the direct storage battery system in others. The Chicago vapor car heating system is installed. Ventilation is provided for by means of a series of Garland ventilators, these being considered sufficient, the deck sash are immovably fixed to their frames. The Pennsylvania Railroad type of buffing device is used and the cars are fitted with Pitt couplers and Westinghouse draft gears. An interesting feature is the employment of the Westinghouse independent truck brake, lately developed by that company, for use on heavy cars which comprises a system with triple valve complete for each truck. The vestibule platforms are fitted with the National steel trap doors.

Except for the modified end framing of the observation cars the same general construction is followed on both the parlor and the observation cars which the Pullman Company has under construction, the difference resting almost entirely with the inside arrangement and the fittings. The interior is finished in a mahogony tint. The berth panels and the headlining are neatly bordered with a not too conspicuous design, the whole effect being entirely pleasing and restful to the eye, which in contrast to the over ornate effects of a decade or two ago, is a feature that the traveling public will not be slow to appreciate.

The Foreman and His Men.*

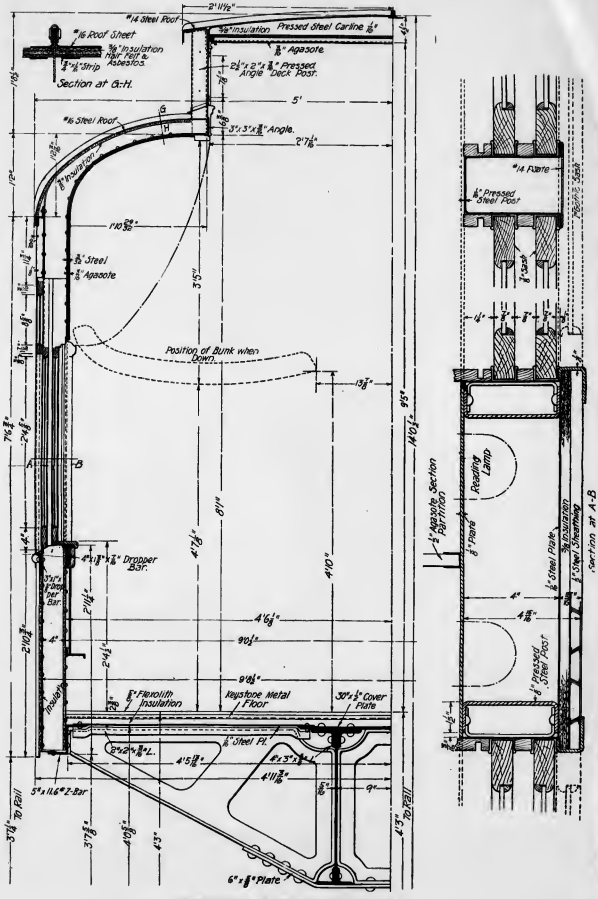
Nothing speaks so ill for the future success of a newly created foreman as to lose the good-will and respect of his men. To keep their good-will he need not remain one of the boys. The confidence which his superiors placed in him in elevating him to the position carries with it to his associates a certain amount of respect, which in their hearts they feel, although they may not make voluble expression of it. He need not hold himself aloof from the men, but, on the other hand, should join with them so far as possible in expressions of thought on matters concerning their welfare and the welfare of their employer. I have placed their welfare ahead of that of their employers. It perhaps would have been better had I reversed the order, for such must always be the case; the employee can only prosper with his employer No employer can long continue to benefit his employees unless he himself is prospering. A foreman, as a rule, is better informed on matters pertaining to the welfare of the employer than are the men. Intelligent co-operation between the foreman and the men spells success by the shortest method possible.

In this day of advancement and enlightenment it is difficult to get men to exert themselves in blind effort. Every one works toward a goal, be that goal what it may, and I firmly believe that much of the unfortunate agitation, which is sweeping wide over our country, is due to the fact that our men are forced to their task in a blind effort to produce so many pieces of this or that article, with little or no idea of what the results of their labors are, or what the component parts of the material they work upon consists of, or to what future use they will be put. Their goal is one expressed in dollars and cents, with which they are compensated for their production. The workman has little of interest to turn his thoughts to except the increase of his earning capacity. He has little or no love for his work or interest in his profession, and no attachment for his shop, or pride in his organization, and falls an easy prey to the agitator who talks to him of the one goal he knows.

I believe it is the duty of you gentlemen at your staff meetings to impress this thought upon your subordinate foremen and advise them by every means possible to instil into their men a knowledge of their work, an interest in their output and a pride in their shop and the organization. I am aware that this is a difficult matter, particularly where you have a large foreign element to contend with, but it should never be forgotten that the foreigner of to-day is the American of to-morrow, and that our railways, great as they are, and our American institutions ranking foremost with those of the nations of the world, are the creation of laborers, a great many of whom were foreigners a generation past.

I believe you have only to look to your foremen to convince yourselves that the interest which they take in the welfare of their employers is prompted by motives other than that of the compensation which they receive. I have found this to be the case many times when foremen have volunteered their services for work other than called for by the routine of their occupation and I look back with a great deal of pride to many instances where employees in the rank and file have done the same, but unfortunately must confess that this spirit which has in times past been of such great physical, as well as moral, support seems to be on the decline and I can only attribute it to a growing distance between the workmen and their immediate superiors. If it be admitted that the human interest factor in the output of the hands be perti-

*Extracts from an address by Mr. W. L. Kellogg, superintendent of motive power and cars, Cincinnati, Hamilton & Dayton Ry., before the International Railway General Foremen's Association, at Cincinnati, O.



Cross Section of New Steel Sleeping Car.

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nent to the increased volume of work, I consider it far more pertinent to the control of the wage situation.

Nothing is so difficult to combat as the lack of intelligence and the most difficult man we have to handle is the one, who made valuable by his ability to do some one thing well, has grown top-sided in his intellect, and believes that his ability as a workman or mechanic leaves him equally able to legislate for himself and his fellow employees in matters economic and politic. You all have in your employ broad-minded workmen developed in the craft, and at the same time conversant with their surroundings. In these men you have little to contend with. Their daily duties are performed systematically and regularly and matters pertaining to their business affairs can be handled amicably and equitably.

Unfortunately these men are not ordinarily selected by their associates as their leaders and representatives when the question of shop rules or wage schedules are to be discussed. All too frequently you are called upon to receive committees which you well know are not made up of men best qualified to handle such matters for their associates. Often the committee is made up of representatives of the radical element, who after having enjoyed the benefits of their labors for a period and knowing the why and wherefores of their occupation, and nothing of whether their employers are enjoying a profitable business or not, and having no other idea than personal advancement regardless of equity, cannot be made to appreciate the unfortunate position in which you yourselves are placed when obliged to decline their requests or demands. I do not mean by this that the private affairs of your company should be scattered broadcast among your employers, but it is right that they should know something of the business in which their energies are expended.

Your foreman has lost his most valuable asset if he is not able to keep in sufficiently close touch with his men, to act as their counselor or adviser, and exert his influence at all times toward peace and harmony, counseling the men to uniform activity and energy, pointing out to them the possibilities of their future success through the success of their employers, encouraging them in habits of temperance and morality, in the establishment of savings accounts and the building of homes, and counseling them when selecting representatives and leaders to pick conservative men, men qualified to appear for them when meeting their superior officers on matters of mutual interest.

The success of their craft can well be likened to the success of a nation, our own great country having been built up as the result of physical application of the energies given us. The most successful labor organizations of this country to-day should be pointed out to the men as the ones which have had the most conservative leaders and in which the men have lent themselves to their surroundings and endeavored to advance with their employers, and to the advantage of their employers, and who have not brought disaster on their employers through their endeavors to advance solely at their expense.

I believe the personal interest feature of your work should be enlarged on at all times. The highest importance should be attached to having foremen keep in closest personal touch with the men under them, displaying an interest in their personal welfare, with solicitude for them in sickness and organizing relief for them in case of need; helping the indifferent workman by endeavoring to get him up to the standard of his more successful associates; singling out the men who will not, or cannot, fit in harmoniously with the balance of the crew and dropping them from the service. They may be valuable elsewhere, if not to you, and it is a mistake, not only for the company and its employers in general, but to the individual as well, to retain a man where he does not fit and where his presence produces discord.

By this, I do not mean that your shops should be converted into social clubs or benevolent societies, or that all your men should be of one accord or belief. On the contrary, avoid clannishness, which begets narrowness and ignorance of surroundings, which is responsible for the greatest evils with which we have to contend. Our mixture of races, who with their varying habits and creeds, producing an enviable rivalry, harmonized and properly guided as necessity arose, has made us the great nation that we are. Our greatest law is equity; our greatest learning, common sense.

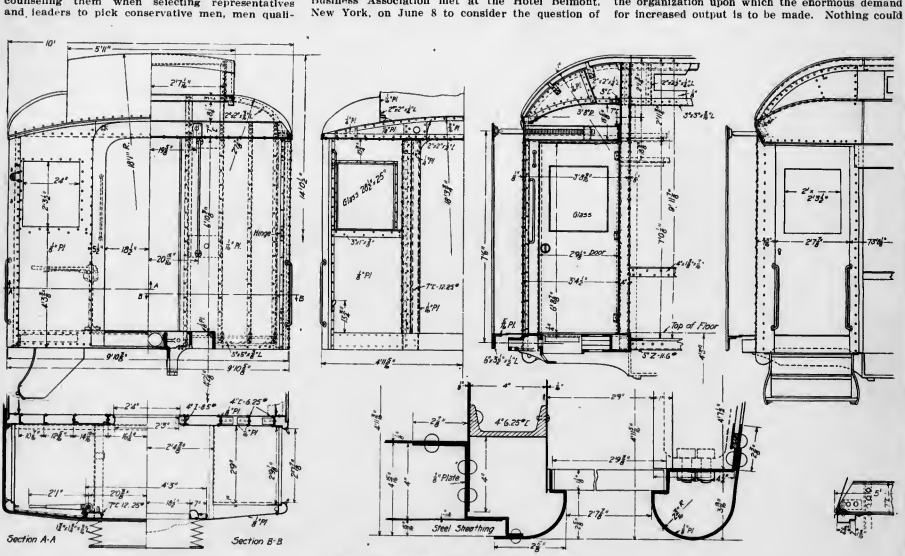
Freight Rate Advances.
Statement of the Railway Business Association.

The general executive committee of the Railway Business Association met at the Hotel Belmont, New York, on June 8 to consider the question of freight rate advances. The following sub-committee was appointed to bring in a statement to be made public: A. H. Mulliken, chairman; H. H. Westinghouse, W. H. Marshall, O. H. Cutler, A. B. Johnson, A. M. Kittredge, E. B. Leigh. The statement brought in by the committee was unanimously adopted by the general executive committee. Others present beside those mentioned were George A. Post, O. P. Letchworth, J. S. Coffin, W. C. Dodd, W. B. Leach, W. H. Miner, H. G. Prout, J. H. Schwacke, James Viles, W. P. Worth. The statement is as follows:

The Railway Business Association, which, within its membership, represents $800,000,000 of invested capital, and which speaks for a group of industries giving employment to 1,500,000 workingmen, and upon which 6,000,000 people depend for support, submits to the American people for their consideration the following statement:

The question of whether the railroads are entitled to a general advance of freight rates is now before the public for fair and comprehensive consideration. The merits of individual rates will come before the Interstate Commerce Commission. During the period of uncertainty as to whether as filed the rates are reasonable or otherwise there will be a disturbance of industrial conditions. It is therefore of the greatest importance that the way shall be cleared for the speediest possible decision by the Commission. To that end the Railway Business Association appeals:

1. To Congress: That the President of the United States having recommended a provision governing the power of the Interstate Commerce Commission over freight rate charges, such provision be enacted forthwith to go into effect upon its passage. This will lay the new rates before the Commission at the earliest possible moment. By this recommendation of the President the powers and duties of the Interstate Commerce Commission are to be greatly enlarged, and in the present emergency it is decreed that the approval of all the hundreds of thousands of freight rates must be given by the Commission before effectuation. It is deemed proper, therefore, to urge that serious attention be given the organization upon which the enormous demand for increased output is to be made. Nothing could



Vestibule Details of New Steel Sleeping Car.

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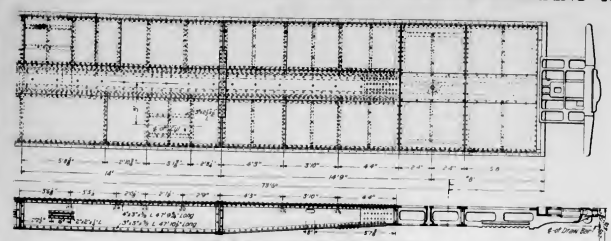


Underframe of New Steel Sleeping Car.

be more disastrous to the railroads and all the commerce and industry of our country than to stake all that is proposed to be staked upon the Commission only to find that with its organization it cannot do the work within a reasonable time. The time to elapse before the Commission shall render its decision is the vital factor. We recognize the high order of ability that has been shown by the Commission and believe with sufficient equipment they will promptly and equitably dispose of this question. We urge that such appropriation as may be found necessary be made to enable the Commission to cope with their increased duties.

2. To the Railways: That they facilitate the work of the Commission by having their schedules so arranged and the reasons therefor so clearly set forth as to require the least possible time to comprehend their scope and bearings upon the questions before the Commission, and that the officials of the railways acquaint the shippers more fully with the reasons for freight advances.

3. To the Shippers: That they look upon the railways precisely as they would look upon any other concern for whose solvency the management and not the government is responsible. A going concern must have an adequate revenue. The present problem involves not merely the amount which the railway shall receive for carrying a consignment, but its ability to carry it at all. It embraces not alone transportation efficiency but general prosperity. We suggest to the heads of freight paying enterprises that they study this question at first hand in the broadest way. By so doing they may conclude that an advance may be for their own best interests.

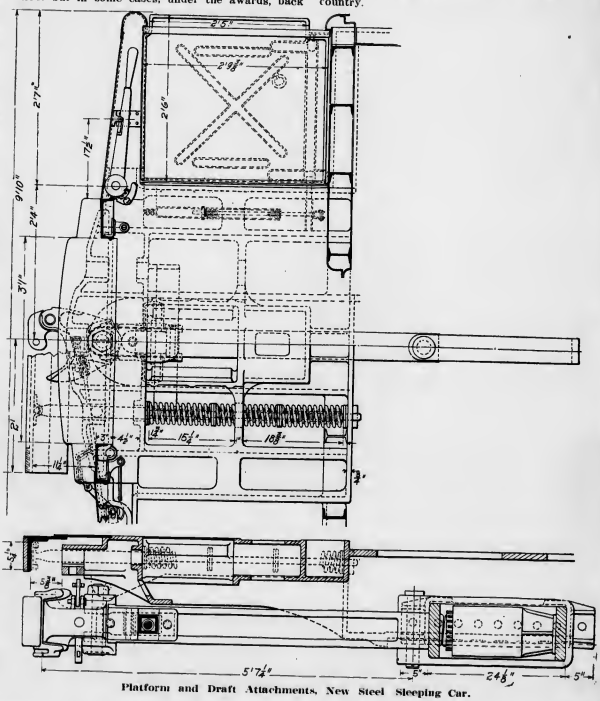
4. To the Public: That they frankly concede to the railways the necessity for adequate revenue and await with patience and good nature the findings of the Commission as to the reasonableness of proposed rates.

The members of the Railway Business Association have but recently emerged from a period of closed shops, idle men and disastrous losses due to cessation of railway purchases. We contemplate with grave anxiety the possibility of undue restriction of railway revenues. Ours is not the plea of a special interest whose prosperity we would purchase at the expense of other interests or of the general public. If our product is not bought the commerce of the country cannot be efficiently carried; if our men are wholly or partly off the payroll the stoppage of their outlays communicates itself to millions more who make or sell them necessities.

It has been said recently in the heat of controversy that in the discussion of freight rate matters "railway supply men are not to be regarded as business men" or identified with shippers. Why not? Companies furnishing equipment, materials and supplies to the railroads pay more than two hundred and fifty million dollars a year in freight bills, or 15 per cent of the total freight revenue of all the railways. As managers of one of the largest groups of industries in the country we have a right to be heard like any other business men. If there is an advance we must pay our share. We are no more eager than others to assume new burdens but while we are deeply interested in seeing that the carriers have adequate revenues we know that the public welfare is equally involved.

As the basis of our belief in the necessity of increased revenues for the railroads, we submit: Either the railroads stand alone among all other business enterprises in their ability to meet universal increases in cost of labor or material without advancing the price of what they have to sell, namely, transportation, or else an advance in rates is necessary. The advances in wages have been relatively a greater burden to the railroads than to other enterprises. The industrial depression found them unable to follow the example of manufacturers and recede from the wage advances previously granted. More recently additional increases have been awarded voluntarily or by arbitration. On many thousand miles of line they are not only in effect but in some cases, under the awards, back payment has been made. The total already arranged for has been estimated at from $100,000,000 to $120,000,000 a year. Vast expenditures have been made for passenger and freight terminals at the great ports and centers, largely yielding no additional income. The interest on these enforced investments must come out of earnings. With returning prosperity in which the public will share, with large crops in prospect and with other conditions favorable, except for the uncertainty as to railroad income, the railroads are unprepared, as they were in 1907, for an unprecedented tonnage. A satisfactory settlement of the rate question is a necessity precedent to earnings sufficiently ample to sustain the financial credit of the railroads and insure their obtaining adequate capital for acquiring facilities to meet these conditions.

It is not a crime to raise a freight rate. It is simply a question whether when raised it is, all things considered, a reasonable rate. The railroads must wait until the law as now under process of amendment shall take effect before they can file any schedules for increased rates. If in making an increase they fix a rate which is unreasonable it ought to be corrected and the Interstate Commerce Commission will surely correct it. The danger lies in hysterical attempts to prevent orderly procedure under the law by appeals to popular passion and prejudice. A serious setback to business confidence has been averted for the present by the agreements reached in Washington. Believing that the railways can make their case for an advance and that in the end the public and the commission will view the matter broadly we indulge strong hopes of the uninterrupted prosperity of the country.



Platform and Draft Attachments, New Steel Sleeping Car.

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comotive Frame Construction," by Mr. H. T. Bentley, A. S. M. P., C. & N. W. Ry.

12:30 p. m. to 1:00 p. m.—Report of Committee on Safety Valves.

Report of Committee on:

1:00 p. m. to 1:30 p. m.—Lumber Specifications.

Wednesday, June 22, 1910.

Discussion of Report on:

9:30 a. m. to 10:00 a. m.—Train Brake and Signal Equipment.

10:00 a. m. to 11:00 a. m.—Individual paper on "Freight Train Resistance," by Prof. E. C. Schmidt, University of Illinois.

Discussion of Reports on:

11:00 a. m. to 11:45 a. m.—Locomotive and Shop Operating Costs.

11:45 a. m. to 12:00 m.—Design, Construction and Inspection of Locomotive Boilers.

12:00 m. to 12:15 p. m.—Consolidation of Master Mechanics' and Master Car Builders' Associations.

12:15 p. m. to 12:30 p. m.—Resolutions, Correspondence, etc.

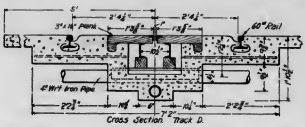
12:30 p. m. to 12:45 p. m.—Unfinished Business.

12:45 p. m. to 1:30 p. m.—Election of Officers, Closing Exercises.

Adjournment.

Steel Freight Car Plant of the Pullman Co., Pullman, Ill.

During the past three years the Pullman Company has found it necessary to add extensively to its car building facilities in order to take care of the vast amount of contract work for individual roads which it has been successful in securing, as well as to provide for the constantly increasing number of its own parlor and sleeping cars. Recent additions to the main plant which covers a 300-acre tract, consist of an irregularly shaped machine and erecting shop providing about 100,000 square feet of floor space, completed early in 1909,



Detail of Transfer Track, Main Car Shop.

and two other buildings, each 250 by 450 ft., completed later in the same year, to provide room for their steel passenger car department.

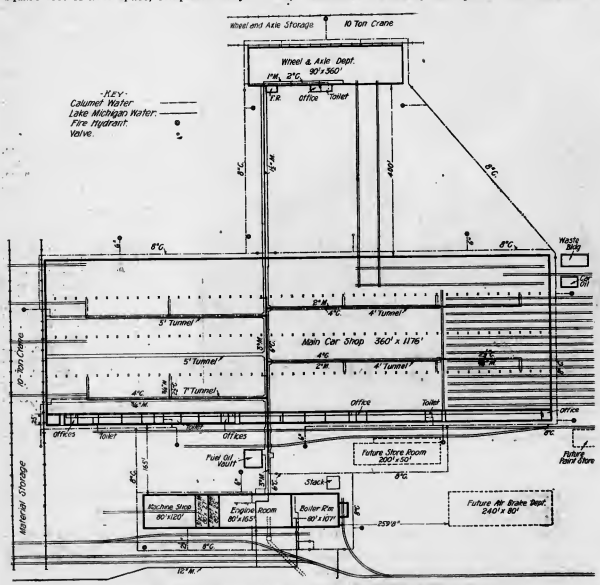
To properly take care of the steel freight car department an entirely new plant has been erected on a 140-acre tract some distance north of the original works. This plant is now rapidly nearing completion, the buildings being under roof and the power plant machinery being partially installed. The plant consists of three main buildings; the combined power house and machine shop, 80 by 450 ft.; the car shop proper, comprising four bays and a lean-to running the entire length of the building, 385 by 1176 ft., and the wheel and axle shop, 90 by 360 ft. All buildings are of brick and steel construction resting on concrete foundations. The roofs are tile covered and each is surmounted by a wide monitor entirely encased in wire glass, thus admitting ample light in all parts of the buildings.

The power house, as above mentioned, includes the machine shop, occupying a space 80 by 120 ft. at the west end of the building. This department, together with the blacksmith shop adjoining, will be equipped with all the machinery necessary for the proper maintenance of the plant as well as for making new machine parts such as dies and formers. Adjacent to the blacksmith shop is the electrical repair department, which will also serve the purpose of a store room for electrical machinery and parts. The interior of the engine room, 80 by 165 ft., is attractively finished with tile floor and white vitrified brick walls. The main engine room equipment consists of two 1000-kilowatt horizontal steam turbines, with their auxiliaries, provision being made for the ready installation of a third unit when required, an Allis-Chalmers high-duty Corliss pump having a capacity of 500 gallons per minute against a pressure of 1000 pounds per square inch, and two 4000 cu. ft. capacity Ingersoll-Rand cross compound air compressors. The auxiliary equipment includes air receivers, hydraulic accumulators, switchboard, exciters, motor generator sets, condensing apparatus, pumps, etc. A 15-ton Shaw electric crane is permanently installed. The boiler room is 80 by 106 ft. in size and in it are installed three 800-horsepower batteries of Sterling boilers having superheater attachments. Sufficient room remains in which to install an additional 2400-horsepower of boiler capacity when needed. The boilers will be automatically fired by the use of chain grate stokers. A bucket conveyor will be used to elevate the fuel from the receiving hopper at the end of the building to the storage bins above the central aisle of the room, and in accordance with the usual practice, this conveyor will also remove the ashes to the receiving hopper from which they will be dumped into cars and hauled from the premises. An 8-ft. smoke duct underneath the boiler settings conveys the products of combustion to the independently supported stack near the corner of the building. This stack is of brick construction, has a 12-ft. inside diameter and is 250 ft. in hight.

An interesting feature of the power plant installation is the provision made for securing condensing water from the Calumet river, some three or four hundred yards away. Twin concrete reservoirs, each 27 by 57 ft. in size, the bottoms of which are 10 ft. 6 in. below normal water level, have been provided. At each end of the reservoirs is a gate house, the one at the intake end also housing a series of removable screens provided for the purpose of keeping as much foreign matter as possible out of the reservoir. The arrangement is such that as the water is being withdrawn from one of the tanks, the water in the other is given time to clarify itself by sedimentation. From these reservoirs the water is conducted to the power house through a 4 ft. 6 in. concrete tunnel, as shown in the illustration.

The main shop building consists of four 90-ft. bays, each with its independent truss roof and glass covered monitor, and a 25-ft. lean-to running the entire length of the building on the south side, the latter being provided for the use of offices, tool rooms, repair rooms, pipe fitting department, tin and light sheet iron shop, chain room, toilets, etc. Each of the four main bays will be provided with the necessary longitudinal tracks, besides cross tracks on which 10-ton motor propelled transfer trucks will be run, the conductors for the latter being placed underground as shown in one of the details attached. In addition to the above, each bay will be served by two 10-ton Shaw electric cranes, which are particularly notable in this case because of their long span. The tool equipment of this shop will be complete in every respect, and among other things will include a 100-ton hydraulic press, bull dozers, punches, rolls, shears, continuous rivet making machinery; a drawbar yoke riveter, and bolt machinery.

All the shearing and punching machinery will be driven by electric motors, alternating current three-phase, 60-cycle, 440 volts. All the machinery for pressing and riveting will be hydraulically driven.



General Layout of Steel Freight Car Plant of the Pullman Company.

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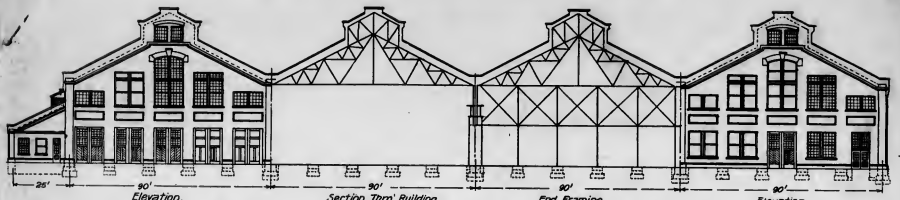


End Elevation of Main Car Shop, Steel Freight Car Plant of the Pullman Company.

The plate and other furnaces will be oil fired, the fuel oil storage being provided in a concrete lined vault midway between the power house and the car shop. This vault will contain three 12,000-gallon storage tanks as shown in the illustration.

A provision similar to the above has been provided near the corner of the main shop, for the storage of car oil, except that this vault contains but two tanks, or a storage capacity of 24,000 gallons. In close proximity to the storage vault is the waste building, 30 by 60 ft., in which waste will be stored and the sponging prepared for the journal boxes.

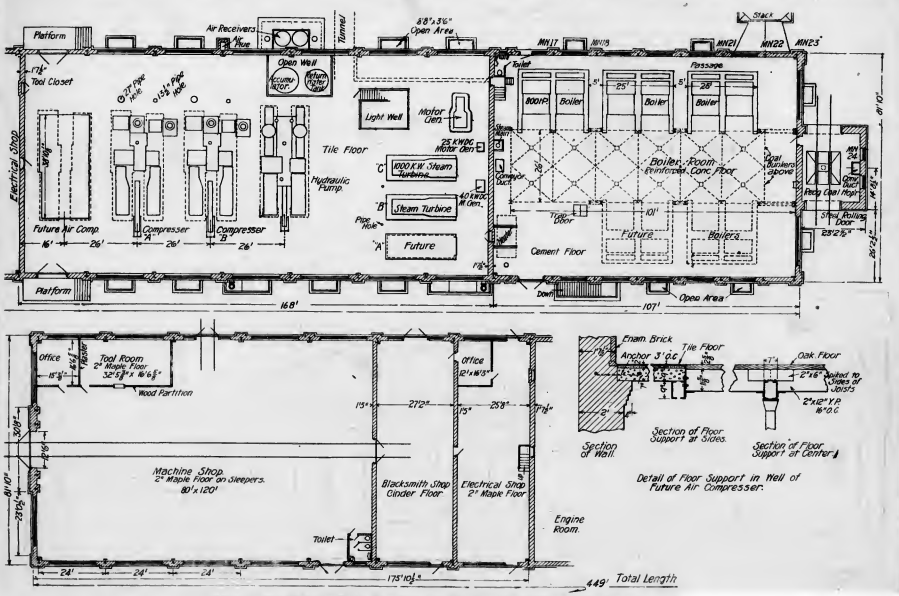
The wheel and axle shop is located 400 ft. north of the main car shop, the intervening space providing ample room for trackage and general storage facilities. The wheel shop is substantially the same in cross section as is any one bay of the main shop. The tool equipment of this shop will consist in part of ten axle lathes, two wheel boring machines and two wheel presses. A 10-ton crane, the duplicate of those in the car shop, is installed. Trucks will be assembled in the main car shop. Just outside of the wheel shop to the north is a wheel and axle storage bay, 450 ft. in length, also served by a 10-ton crane.

The material storage yard for the car shop is located at the west end of the shop and consists of a bay extending from near the northwest corner of the shop almost to the property line on the south, a total length of about 700 ft. Material will be unloaded from cars or transferred from storage to trucks by means of a 10-ton overhead traveling crane.

A very important feature of this installation is the system of tunnels provided in which the steam, water, air, oil, gas, electric, and other conduits will be placed. The main tunnel extending from the power house to the wheel shop directly across the car shop, is 7 by 7 ft. in section and the three branches to the west and the two to the east, in the car shop, are 7 ft. by 5 ft. in section. All are concrete lined throughout. By providing these tunnels, all pipe lines, etc., may be readily inspected, altered and repaired, without the necessity of reopening trenches or undermining foundations as is frequently done. Practically the only pipe line not laid in the tunnel is the 8-inch fire service line which covers every possible portion of the plant where fire protection may be needed. Water for fire protection will be drawn by the service pump from the Calumet river some distance away, although provision is made for connection with the Lake Michigan supply, which is used for boiler and drinking purposes, should occasion demand it. While temporarily the plant may be considered complete as described herein, ample space for future extensions is available. The next additions will, in all probability, consist of a general store house, a paint storage building and a building to house the air-brake department exclusively. The plant has been designed for a capacity of 75 steel freight cars per day.

Two Daily Sessions of Car Builders.

Heretofore the car builders' and master mechanics' associations, in their annual conventions, have held only one daily session, from 9 a. m. to 1:30 or 2 p. m. This has left the afternoons and even-



Plan of Powerhouse, Steel Freight Car Plant of the Pullman Company.

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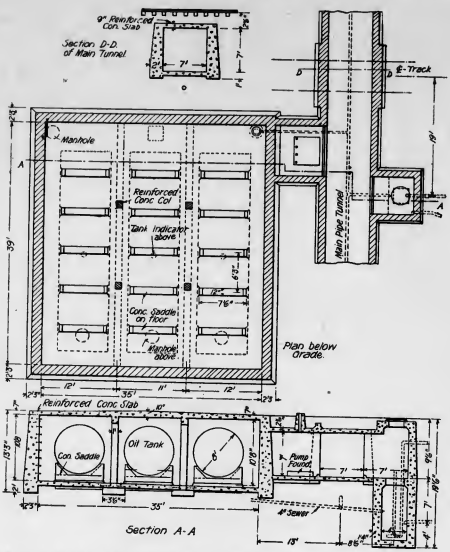
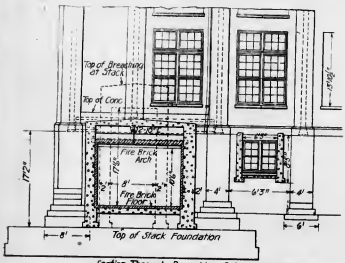
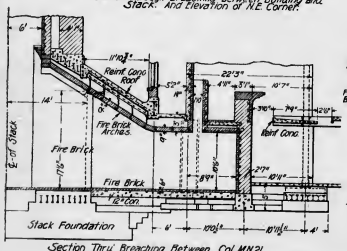


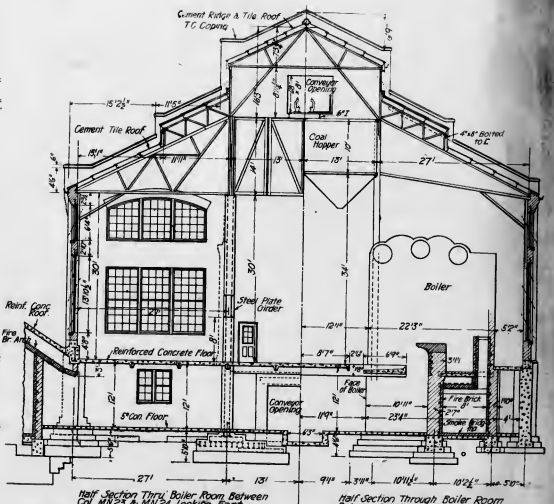
Fuel Oil Storage Vault, Steel Freight Car Plant of the Pullman Company.



Section Through Breaching Between Building and Stack. And Elevation of N.E. Corner.



Section Thru. Breaching Between Col MN21 & MN22 Looking East Showing Section Thru Boiler E.



Half Section Thru. Boiler Room Between Col MN23 & MN24 Looking East.

Half Section Through Boiler Room Between Col MN17 & MN18 Looking West Showing Section Thru Boiler B.

Cross Section of Powerhouse, Steel Freight Car Plant of the Pullman Company.

ings free for examination of exhibits, committee meetings and recreation. This year the master car builders will hold two daily sessions, one from 10 a. m. to 12:30 p. m., the other from 2 p. m. to 4 p. m. The length of time in the day's session is the same—four and one-half hours. Possibly the division into two sessions will give great freshness and vim to the meetings. Four and a half hours is rather a long sitting. It has also been noticeable that it was difficult to get much of an attendance between 9 and 10 o'clock in the morning.

The Interstate Commerce Bill.

The Senate has finally passed and sent to the House, its bill amending the interstate commerce law. The House has refused to concur in it, and conferees have been appointed by both bodies who are now at work. The following is a brief summary of the Senate measure:

1. It creates a court of commerce for the enforcement of orders of the Interstate Commerce Commission.

(a) The court will be composed of five judges designated by the chief justice of the United States from judges of the Circuit Court of Appeals, for the period of five years.

(b) Appeals may be taken from the court of commerce to the Supreme Court of the United States.

(c) The attorney general will control the interests of the government in all cases in the commerce court, but the Interstate Commerce Commission and any party in interest to the proceeding before the commission may appear as parties thereto before the court and be represented by counsel.

(d) The attorney general is prohibited from discontinuing any proceedings over the objection of an intervenor, and the latter may continue the proceeding unaffected by the action or non-action of the attorney general.

2. No railroad shall charge any greater compensation for a shorter than for a longer haul, except in cases where such action is authorized after investigation by the Interstate Commerce Commission.

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3. Railroads will be compelled to state in writing the rate or change applicable to a described shipment.

4. The Interstate Commerce Commission upon complaint is authorized to determine and prescribe the just and reasonable individual or joint rate as the maximum to be charged, and what individual or joint classification, regulation, or practice is just, fair, and reasonable.

5. The commission may suspend the operation of any new rates, classification, regulation, or practice for a period not exceeding 120 days, and extend the time of suspension for a further period not exceeding six months, after which time the new rate, classification, regulation, or practice will become effective, unless the commission orders to the contrary.

6. All waybills or interstate shipments where increased rates apply must show the date, charge, and various other details. In case the increased rate is found unreasonable, then the carrier must refund to the party paying it the difference between that and the rate as it existed before the increase was made.

7. The commission may establish through routes and joint classifications and joint rates as the maximum to be charged whenever the carriers themselves refuse to do so.

8. The commission is forbidden to establish any through route, classification, or rate between electric railways and railroads of a different character.

9. The right is given a shipper to designate one of several through routes by which his property shall be transported to its destination.

10. Every failure to obey an order of the commission shall be punished by a fine of $5,000.

11. Copies of classification, tariffs, etc., furnished to the commission shall be public records.

The Senate declined to adopt the following important recommendations made by the administration:

1. Prohibiting railroads from acquiring or holding an interest in a competing line, but permitting a railroad owning not less than 50 per cent of the securities of another railroad corporation to acquire the property of the latter.

2. Authorizing the Interstate Commerce Commission to control and regulate future issues of railroad securities.

3. Permitting railroads to make agreements respecting classification of freight and the rates charged therefor and for passengers.

The Rate Injunction.

The administration has agreed to suspend any further prosecution of its injunction case, and the railways east, west and south have agreed to withdraw all tariffs which were to take effect June 1 or afterward, and not file others until the new law is passed or Congress has adjourned. A committee representing the Western trunk lines, consisting of Presidents Ripley, Delano and Felton, waited on President Taft at the White House, Monday. In our editorial columns we give a rather full account of the meeting. The President gave out the following:

"The President stated to these gentlemen (the committee) at the outset that the purpose of the suit was to prevent the proposed rate increase (which, under the existing law, could not be investigated at all until after they had become effective) so as to preserve the status until the new statute could be passed and the commission should have the power to investigate rate advances as soon as announced and before becoming effective.

"He stated further that he thought the railroad companies must withdraw the tariffs enjoined and all other tariffs filed by them effective on or after June 1, 1910, and that none of them ought to file any new tariffs involving rate advances until the new law should be passed, assuming that it would be passed at the present session of Congress.

"After conference the railroad companies announced that they would adopt the view expressed by the President and, thereupon the President stated that if they did so, his purpose in bringing the suit would be accomplished, and such result being accomplished, he saw no occasion for pressing the suit and the same would be withdrawn."

On Tuesday the President received the representatives of the eastern roads, Presidents McCrea, of the Pennsylvania, Brown, of the New York Central, and Finley, of the Southern, and Judge Massey, general counsel of the Pennsylvania. After a conference of an hour and a half the President gave out the following:

"At the conference it was agreed that if the amendment recommended in the message of the President this morning to the pending railroad bill was adopted, and if the bill became a law on or before July 1, no agreement was necessary to bring the rate in question before the Interstate Commerce Commission for investigation and decision before they become effective. But it was further agreed that if the enactment of the railroad law was deferred, or it should otherwise become necessary, the railroad companies would submit the proposed advance in rates to the Interstate Commerce Commission in accordance with the provisions of the new law.

"Mr. Finley, the president of the Southern Ry., stated that as to Southern territory his company, while recognizing the necessity for some increase in some of the rates, had taken no action as yet, so that there was no need of any stipulation by his company."

Following this, the President sent the following message to Congress:

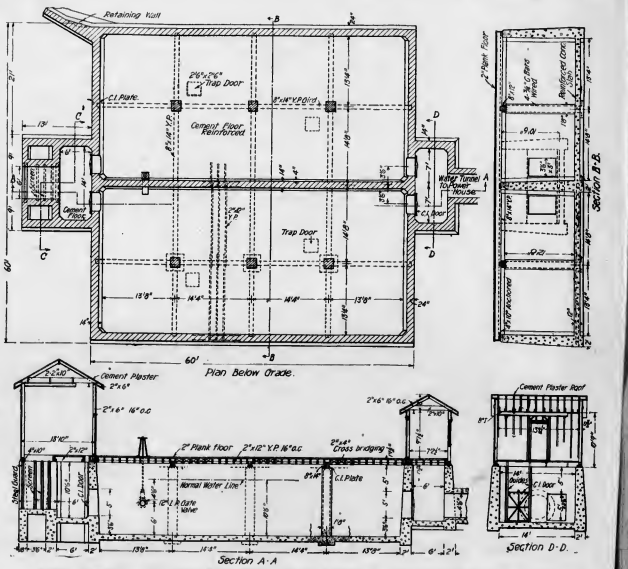
"A recent effort by a large number of railroad companies to increase rates for interstate transportation of persons and property caused me to direct the attorney general to bring a suit and secure from the United States Court in Missouri an injunction restraining the operation of such increased rates during the pendency of the proceeding. This action led to a conference with the representatives of the railroad companies so enjoined and the agreement by each of them to withdraw the proposed increases of rates effective on or after June 1 and not to file any further attempted increases until after the enactment into law of the pending bill to amend the interstate commerce act or the adjournment of the Congress, with the further understanding that upon the enactment of such a law each would submit to the determination of the Interstate Commerce Commission the question of the reasonableness of all increases that each might thereafter propose.

"It is now hoped that all of the other railroad companies will take like action. In order, however, that each may have the benefit of a speedy determination of the question whether or not its proposed increases in rates are justifiable, provision should be made by Congress to vest the Interstate Commerce Commission with jurisdiction over such questions as soon as possible.

"In the Senate amendment to Section 15 of the act to regulate commerce contained in H. R. 17,536, the Interstate Commerce Commission is empowered immediately upon the filing of a proposed increase in rates, of its own motion or upon complaint, to enter upon an investigation and determination of the justice and reasonableness of such increase, and in case it deems it expedient to suspend the operation thereof for a period specified in the section to enable it to complete such investigation. That bill, however, provides that the act shall take effect and be in force only from and after the expiration of sixty days after its passage.

"This provision, if allowed to remain in the bill, would enable carriers, between the time of enactment of the bill and the time of its taking effect, to file increases in rates which would become effective at the expiration of thirty days and remain in effect and be collected from the public during the pendency of proceedings to review them, whereas if the bill be made to take effect immediately, such investigation will have to be made before the public is called upon to pay the increased rate.

"I therefore recommend that this latter provision be modified by providing that at least Section 9 of the Senate amendment to the bill, which is the section authorizing the commission to sus-



Intake Reservoir for Condensing Water Steel Freight Car Plant of the Pullman Company.

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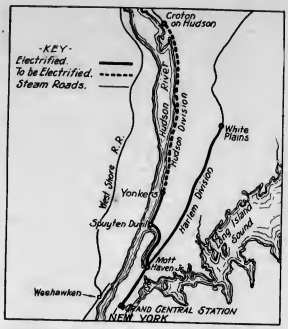
pend the going into effect of increases in rates until after due investigation, shall take effect immediately upon the passage of the act."

Suburban Equipment, New York Central & Hudson River R. R.

The electric zone of the New York Central & Hudson River R. R. at present extends on the Harlem division, from the Grand Central Terminal to North White Plains, N. Y., a distance of twenty-four miles, which, for the time being, is as far as this division will be electrified. On the Hudson division electrification has been completed as far north as Yonkers, twelve and one-half miles, but is being extended to Croton, N. Y., a further distance of twenty-two miles, as rapidly as the work can be carried out. Suburban service is provided on both of these divisions as far as the points named, the equipment being used therefor consisting of motor cars run on the multiple unit system, together with as many trailers in each train as can be conveniently handled without impairing the efficiency of the service. On the Harlem division, these multiple unit trains operate to White Plains without interruption, but on the Hudson division, in order that the suburban service may be maintained as far as Croton, it is the practice to attach a steam locomotive at Yonkers for the remainder of the run, which practice will be continued until the electrification is completed.

We illustrate herewith the type of car that is being used in this service, fifty-five of which, both motors and trailers, have been delivered to the road during the past three years by the St. Louis Car Co., of St. Louis, Mo. Because of the change in the motive power when passing in or out of the electric zone, it was necessary to provide these cars with heating, lighting and braking facilities adaptable to both steam and electric service. The motor cars may be used either in trains or singly, as each car is an operating unit in itself, being fitted with all necessary motor and auxiliary equipment. When used under electric power the cars may be distributed alternately with trailers in trains of three, seven, nine and eleven cars. A train of eleven cars will require about seven mo-



Suburban Equipment, N. Y. C. & H. R. R. R., Map of the Electric Zone.

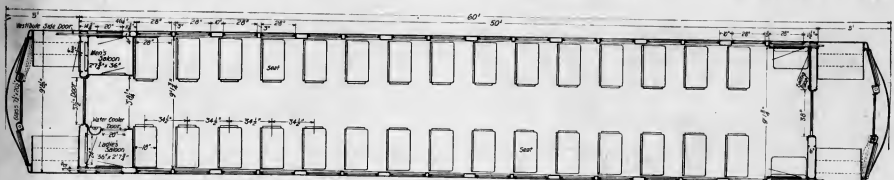
tor cars. The control is of the Sprague-General Electric multiple unit type, with a controller at each end of the car.

The underframe, as shown in the accompanying illustration, consists of structural shapes as specified, covered over by No. 10 steel plate, which carries the karbolith floor. The bolster of open hearth steel plates as shown, and contains, as special features, the large steel center filler and side bearing castings of malleable iron, also the cast steel fillers between bolster and side sill. The cross section shows clearly the details of construction of the car body. The posts are of 3-16 in. pressed steel. The side sheet below the belt rail, consists of 3-16 in. plate and the letter board of 1-8 in. steel plate. The roof covering is of ¼ in. durite, with No. 6 duck cover. The interior finish is entirely of steel, with pressed and drawn mouldings. The headlining is also of durite, 3-16 in. in thickness. The cars are equipped with Hale & Kilburne's rattan covered seats, Pintsch gas, electric lights, straight steam and electric heating, automatic air brakes, and the National draw-bar centering device. All ash lumber used for furring of posts, sides and deck is chemically treated to make it fire-proof.

The over-all length of the passenger cars is 60 ft., the width is 9 ft. 10½ in., and the hight from the rail to the top of the roof is 13 ft. ½ in. Seating capacity is provided for 64 persons. The weight of the car body is 67,000 lbs., and the total weight fully equipped is for motor cars 112,200 lbs., and for trailers 89,950 lbs. The trailer trucks are of the standard four-wheel pedestal type, The motor trucks are of the four-wheel swing bolster type, having cast steel side frames. For a description of the motor truck, the reader is referred to the Railway and Engineering Review for May 12, 1906.

The latest addition to the foregoing equipment consists of six all steel combination mail, baggage, and express cars, also built by the St. Louis Car Co. Heretofore the mail, baggage and express service within the suburban district has been provided by the regular through trains. It is now intended to relieve these trains of the greater portion of this work by the introduction of the combination cars referred to. As in the case of the passenger cars, they are adapted to operation, either in steam trains, in a combined steam or electric service, or in the electric multiple unit trains. Since in the makeup of the multiple unit trains, the combination car will always be placed at the head, an electric headlight is mounted on the curved hood at either end of the car. The brakes are of a type adapted to both steam and electric service, the equipment for the latter purpose including a motor-driven air compressor on each car. Both Pintsch gas and electric lights are installed.

The Combination cars are 61 ft. long, their width is 9 ft. 10½ ins. and the hight, 13 ft. 9½ ins. The weight, fully equipped, is about 120,000 lbs., and the carrying capacity 40,000 lbs. The side and end walls, both inside and out, are of 3/16-in. steel, insulated by the use of "vitro-bestos" board. The



Suburban Equipment, N. Y. C. & H. R. R. R., Floor Plan of Passenger Car.

Suburban Equipment, N. Y. C. & H. R. R. R., Exterior of Passenger Car.

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RAILROAD AGE GAZETTE, N.Y., FRIDAY, DEC. 24, 1909

NEW PASSENGER EQUIPMENT FOR THE SOUTHERN.

The accompanying illustration shows an exterior view of one of about 100 new passenger cars built by the Pullman Company, Chicago, and the Barney & Smith Car Co., Dayton, Ohio. These cars have recently been received by the Southern Railway.

These cars are 66 ft. long over end sills, 74 ft. 8¾ in. long over buffers, and 9 ft. 10⅛ in. wide over the siding. They have a seating capacity for 72 passengers.

The underframing is built of structural steel. The six-wheel trucks are of all cast-steel design, built by the Com-

Steel Underframe Passenger Coach; Southern Railway.

railways with fiscal years ending December 31. These companies are included also in the 381 railways, fiscal years of the remaining 178 companies ending June 30 or September 30. Electric railways felt the business depression much less severely than the steam roads; but although their aggregate earnings showed an increase, some of the individual roads fell behind in earnings. This seems to be particularly true in localities where street railway traffic is wholly or in large part dependent on one branch or division of industry.

The 11.89 per cent. falling off in steam railway business brought about a 13.89 per cent. reduction in operating expenditures for both labor and material, thereby effecting a decrease in net earnings of only 7.13 per cent. In the following tabulation the decrease in operating expenses of electric railways reflects the fall in prices of materials and supplies, rather than a reduction in expenditures for labor:

TABLE II.—*Increases and Decreases in Earnings and Expenses.*

	164 steam r'ys.		203 electric r'ys.	
	Amount.	Per ct.	Amount.	Per ct.
Gross earnings	—$301,750,000	11.89	+ $1,875,000	0.67
Operating expenses	— 248,379,000	13.89	— 1,100,000	0.71
Net earnings	— 53,371,000	7.13	+ 3,035,000	2.65

— Decrease. + Increase.

It is apparent at once that the strength of electric railways lies in passenger traffic, freight movement forming a very small portion of their business. Figures for 59 of the largest steam railway systems in the United States show that their decrease in freight earnings was equal to five times the decrease in passenger earnings, the latter showing a decrease of

Where Are the Increases?

The Pullman Company has voluntarily submitted to the Kansas Railway Commission a reduced tariff of berth and chair rates in Kansas. The proposed schedule shows 175 rates formerly $2, reduced to $1.50; 26 rates formerly $2.50, reduced to $2; 24 rates formerly $3, reduced to $2.50; eight rates formerly $3.50, reduced to $3; three rates formerly $3.50, reduced to $2.50; two rates formerly $4, reduced to $3.50; 1,254 seat rates are shown in the tariff of which 820 were decreased; 154 seat rates were decreased 5 cents, 206 were decreased 10 cents; 164 decreased 15 cents; 111 decreased 20 cents; 112 decreased 25 cents; 49 decreased 30 cents; 16 decreased 35 cents, and eight decreased 40 cents.

The Pullman Co. has bought a site in Point Richmond, Cal., upon which it plans to build car repair shops, work to commence about March 1, 1910. The site includes 21 acres and is located just north of the Southern Pacific depot.

RAILWAY REVIEW
CHICAGO, SAT., JAN. 8, 1910

—The Harriman Lines, which were reported in our issue of December 25 as being in the market for refrigerator cars, have placed orders for 2000 refrigerator cars with the American Car & Foundry Co. and 1000 refrigerator cars with the Pullman Co.

RAILROAD AGE GAZETTE
N.Y., FRI., JAN. 14, 1910

George F. Brown, who retired from the office of treasurer of the Pullman Company in 1907, died at the Calumet Club, Chicago, January 9, aged 66 years. He served in the quartermaster's department of the Union army during the Civil War, held various r'way positions, and entered the service of the Pullman Company in 1871, remaining with it in various capacities until his retirement in 1907.

CAR BUILDING.

The Staten Island Rapid Transit has ordered 11 passenger cars from the Wason Mfg. Co.

The Harriman Lines are negotiating with the Pullman Co. for 2,000 refrigerator cars for the Pacific Fruit Express.

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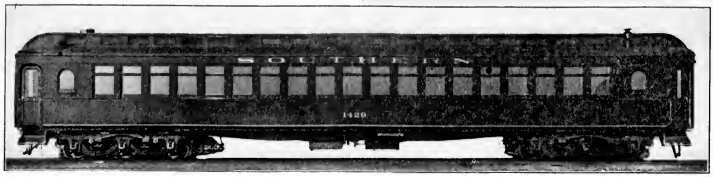

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RAILWAY REVIEW
CHICAGO, SAT., JAN. 15, 1910.

PERSONALS.

Mr. George Francis Brown, who resigned about two years ago as treasurer of the Pullman Co., owing to poor health, died on January 10. Mr. Brown, who was 66 years old was born in Chicago, Ill. He entered railroad service in July, 1867, being connected with the Memphis, Clarksville & Louisville, and later went to Washington, D. C., as representative of the Illinois Central, settling war claims against the government. When he entered the Pullman Company, in 1871, Mr. Brown was assistant to the general superintendent and became general superintendent in 1880. Five years later he became general manager, a position he held until 1905, when he was made treasurer. In two years he retired.

—It has been announced that all of the $1,000,000 worth of the preferred stock of the United States Light & Heating Co. has been sold and that this company has closed a contract for the equipment for 130 new cars being built by the Pullman Co. for the Atchison, Topeka & Santa Fe.

RAILWAY REVIEW.
CHICAGO. SAT. FEB. 12. 1910.

—At a me[illegible] of the Board of directors of the Pullman Co[illegible]y held on Feb. 10, it was decided to call a special stockholders' meeting to be held on March 21, at which would be submitted a proposition for capitalizing the surplus assets of the company to the extent of $20,000,000. The considerations influencing this action were stated to be, that the increased in[illegible]stment in the manufacturing facilities of the company had been so material and considerable as to justify the directors in the belief that it should be represented in additional capital stock of the company. There were certain reserve accounts in the manufacturing department which have hitherto been held in abeyance to meet contingencies which were possible to arise, but which present conditions [illegible] improbable. These items, together with the existing surplus, as shown in the published statement of the last fiscal year, and the current results of operation, are regarded by the board as a justification for making this recommendation.

THE FINANCIAL AGE.
NEWYORK APRIL 18, 1910

Pullman Rates to be Reduced.

A reduction of rates on sleeping cars of the Pullman Company has been ordered by the Interstate Commerce Commission. It is held that to charge equally for upper and lower berths is unjust and unreasonable. Differential rates are to be put in force and charges from Chicago to the Pacific to be reduced. A short night's journey, the commission holds, should not carry a rate of more than $1.50 for a lower berth and $1.10 for an upper.

The investigation showed that the amount carried to surplus annually by the Pullman Company did not fall far short of the annual dividends of 8 per cent.; that in 1898 a cash dividend of $7,200,000 was paid out of accumulated surplus; in 1899 a special stock dividend of 50 per cent. amounting to $18,000,000, was declared, and in 1907 another of 36 per cent., amounting to $26,015,256, were divided. During a period of eleven years $51,000,000 in special cash and stock dividends were paid in addition to the annual ones. In 1898 the stock of the company was increased from $36,000,000 to $100,000,000, of which $20,000,000 is accounted for by the acquisition of the Wagner Palace Car Company. The remainder of the increase of $44,000,000 represents capitalization of surplus. The record shows that no additional capital was put in.

The Pullman Company will probably contest the reductions ordered, denying the jurisdiction of the commerce commission. It has been intimated that the Pullman Company would avail itself of the dissenting opinions filed by Chairman Knapp and Commissioner Harlan. According to the testimony, it is said, the Pullman Company is able to even bear greater reductions than have been ordered. [illegible]

THE FINANCIAL AGE
NEWYORK. MAY 23. 1910.

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A bill has been filed by General Solicitor Daniels, of the Pullman Co., with the clerk of the United States Circuit Court, attacking the jurisdiction of the Interstate Commerce Commission in its recent order directing a reduction of sleeping car rates. The company alleges it is not engaged in the business of furnishing transportation, merely renting its cars to the railroads.

THE FINANCIAL AGE.
NEWYORK. MONDAY. MAY 30. 1910

Pullman Co. Engaged in Hotel Keeping and Not in Transportation.

The Pullman Co., reinforced in its contentions by the Great Northern, the Atchison and the St. Paul lines in seeking to overthrow the jurisdiction of the Interstate Commerce Commission in reducing sleeping berth rates, attacks the constitutionality of the Hepburn Act, but the main contention of its attorneys was that the Pullman Co. is not a common carrier engaged in transportation, but that its business is analogous to that of hotel-keeping.

A contract has been signed with the Pullman Co. by the Pennsylvania Railroad system renewing the period for use of the former's cars for twenty years from July 1 next.

[illegible] has $10,000,000 in [illegible]

RAILWAY AGE GAZETTE.
NEWYORK. FRIDAY. JUNE 3, 1910.

Judges Grosscup, Seaman and Baker of the United States circuit court heard arguments at Chicago on May 25 on the petition of the Pullman Company for an injunction to restrain the Interstate Commerce Commission from reducing the rates of this company between Chicago and St. Paul, St. Paul and Seattle and other cities. The Chicago, Milwaukee & St. Paul, the Great Northern and the Santa Fe filed petitions to be allowed to intervene as co-complainants against the commission. George B. Fernald, general attorney of the Pullman Company, contended in his argument that this company is not a common carrier but more in the nature of a hotel company, and that therefore its rates are not subject to public regulation. An affidavit of Robert T. Lincoln, president of the company, was filed, stating that if the rates fixed by the commission were put into effect they would, because of competition, compel a reduction in all sleeping car rates west of the Missouri river. Burton Hanson, general solicitor of the St. Paul, in his petition stated that this road is now operating sleeping cars between Chicago, St. Paul, Butte, Mont., and other points, and by August 1 expects to be operating them to Tacoma and Seattle, and that if the Pullman Company makes a reduction, the St. Paul will be compelled to make corresponding reductions.

RAILWAY REVIEW.
CHICAGO. SATURDAY. JUNE 4 1910

SATURDAY, JUNE 4, 1910.

It is quite true, as the Pullman Co. contends, that it is an inn-keeper, and not a carrier. It furnishes lodging at night, and other accommodations by day. But commerce does not consist in transportation only; and the lodging is partly in one state and partly in another. The power "to regulate commerce between the states" is not limited to carriage only. We apprehend that the government does not rely upon the question of carriage, but upon the fact that the inn is or may be in several different states during the fulfilment of its undertaking to furnish a bed.

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Mr. George Francis Brown, who resigned about two years ago as treasurer of the Pullman Co., owing to poor health, died on January 10. Mr. Brown, who was 66 years old was born in Chicago, Ill. He entered railroad service in July, 1867, being connected with the Memphis, Clarksville & Louisville, and later went to Washington, D. C., as representative of the Illinois Central, settling war claims against the government. When he entered the Pullman Company, in 1871, Mr. Brown was assistant to the general superintendent and became general superintendent in 1880. Five years later he became general manager, a position he held until 1905, when he was made treasurer. In two years he retired.

—It has been announced that all of the $1,000,000 worth of the preferred stock of the United States Light & Heating Co. has been sold and that this company has closed a contract for the equipment for 130 new cars being built by the Pullman Co. for the Atchison, Topeka & Santa Fe.

RAILWAY REVIEW.
CHICAGO. SAT. FEB. 12. 1910.

—At a meeting of the Board of directors of the Pullman Company held on Feb. 10, it was decided to call a special stockholders' meeting to be held on March 21, at which would be submitted a proposition for capitalizing the surplus assets of the company to the extent of $20,000,000. The considerations influencing this action were stated to be, that the increased investment in the manufacturing facilities of the company had been so material and considerable as to justify the directors in the belief that it should be represented in additional capital stock of the company. There were certain reserve accounts in the manufacturing department which have hitherto been held in abeyance to meet contingencies which were possible to arise, but which present conditions make improbable. These items, together with the existing surplus, as shown in the published statement of the last fiscal year, and the current results of operation, are regarded by the board as a justification for making this recommendation.

THE FINANCIAL AGE.
NEW YORK APRIL 18. 1910

Pullman Rates to be Reduced.

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The investigation showed that the amount carried to surplus annually by the Pullman Company did not fall far short of the annual dividends of 8 per cent.; that in 1898 a cash dividend of $7,200,000 was paid out of accumulated surplus; in 1899 a special stock dividend of 50 per cent. amounting to $18,000,000, was declared, and in 1907 another of 36 per cent., amounting to $26,015,256, were divided. During a period of eleven years $51,000,000 in special cash and stock dividends were paid in addition to the annual ones. In 1898 the stock of the company was increased from $36,000,000 to $100,000,000, of which $20,000,000 is accounted for by the acquisition of the Wagner Palace Car Company. The remainder of the increase of $44,000,000 represents capitalization of surplus. The record shows that no additional capital was put in.

The Pullman Company will probably contest the reductions ordered, denying the jurisdiction of the commerce commission. It has been intimated that the Pullman Company would avail itself of the dissenting opinions filed by Chairman Knapp and Commissioner Harlan. According to the testimony, it is said, the Pullman Company is able to even bear greater reductions than have been ordered. This fact was brought out conclusively, it is believed, in the contracts with the railroads. In some instances, it is said, a part of the profits of operating Pullman cars were diverted to the railroads and in other instances the Pullman Company paid all the operation expenses of the trains carrying their cars.

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NEW YORK. MONDAY. MAY 30. 1910

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NEW YORK. FRIDAY. JUNE 3, 1910.

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RAILWAY REVIEW.
CHICAGO. SATURDAY. JUNE 4. 1910

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Passenger Cars.

—The Illinois Traction System is asking for prices on 21 pay-as-you-enter electric cars.

—The Chicago Great Western has ordered eight all-steel passenger cars from the Pullman Co. The order is divided as follows: Five 60-ft. coaches, two combination library, smoker and chair cars, one dining car.

—The Pennsylvania Railroad has signed a contract with the Pullman Co., renewing the period for the use of the latter's cars for 20 years from July 1, next.

Iron and Steel

RAILWAY AGE GAZETTE
DAILY EDITION
FRIDAY JUNE 17. 1910

PULLMAN TRANSPORTATION.

Free Pullman transportation can be had upon request to E. A. Benson, mechanical engineer, of the Pullman Company, at Galen Hall. Only the members of the association who are entitled to such transportation can procure it.

RAILWAY AGE GAZETTE
NEW YORK - JUNE 17. 1910 - CHICAGO.
FRIDAY.

A Good Word for the Porter.

There is one class of railway employees whose wages are never raised—the humble Pullman car porter. Prices may rise and the cost of living go up by leaps and bounds, yet no one ever suggests an increase of the less than one-dollar-a-day wage these men receive. True they are given tips, and the comic weeklies are always having their fling at the millionaire porter. Nothing could be a bitterer jest—for the porter. Tips fall off or decrease as railway rates go up, with other expenses. On some runs a man can make little; on others the physical hardships are very great, involving days of hard work and nights of little sleep and much discomfort. The Pullman Company makes millions—such enormous profits that the Interstate Commerce Commission has ordered a reduction of rates for upper berths—but it still charges against the porters' pay all loss and breakage. If a passenger steals a towel or a hair-brush the porter must pay for it; no excuse is accepted. The car company also encourages the tipping idea, so that it may shift part, perhaps half, of its wage burden upon the traveling public. Long and faithful service, devotion to the company's interest, all count for nothing. The best porter in the country cannot hope to be a Pullman conductor, because of his color. The vast majority of porters, be it noted, are honest, obliging and well-behaved; cases of dishonesty or flagrant misbehavior are extremely rare.—*Evening Post*, New York.

Governor's Island to Philadelphia Without a Stop.

On Monday last, June 13, Charles K. Hamilton flew, in his biplane, from Governor's Island, New York harbor, to Philadelphia, about 85 miles, in one hour, 50 minutes, and after a rest of two hours returned to New York; but on the return [illegible] alighted at South

In the federal court at Chicago, June 11, the petition of the Pullman Company for an injunction to restrain the enforcement of reduced rates for berths, as recently ordered by the Interstate Commerce Commission, was denied. This decision covers also the petition of the Great Northern Railroad, both petitioners being advised to go to the commission for a rehearing. The decision was oral and was given by Judge Grosscup, Judges Baker and Seaman concurring. The court held that the Pullman Co. had failed to show that it would suffer any injury by the order. Plaintiffs were assured for bringing before the court evidence which had not been presented to the Interstate Commerce Commission. The motion was denied without prejudice.

RAILWAY REVIEW.

CHICAGO. SATURDAY. JUNE 18. 1910

The Pullman Sleeping Car Rate Case.

On June 11 Judges Grosscup, Seaman, and Baker, of the United States Circuit Court, at Chicago, denied the application of the Pullman Co. and the Great Northern Ry. for a preliminary injunction restraining the taking effect of the order of the Interstate Commerce Commission of March 15, reducing as unreasonable the charges for upper berths and some of the lower berths between Chicago and St. Paul, St. Paul and Seattle, St. Paul and Fargo, St. Paul and Superior, and St. Paul and Grand Forks. The injunction was denied on the grounds that neither company had made a showing of irreparable injury sufficient to justify the court in holding up the order which previously had been postponed by the commission from June 1 to July 1. By the same decision, the court dismissed without prejudice the application of the Atchison, Topeka & Santa Fe and Chicago, Milwaukee & St. Paul Rys., which operate sleeping cars themselves or jointly with the Pullman Co., to intervene as co-complainants. An application of the Great Northern for a preliminary injunction is still pending in the Circuit Court at St. Paul, but E. C. Lindley, general solicitor of that road, announced that he would immediately file a petition with the Interstate Commerce Commission to rehear the case and again postpone its order in order to hear additional evidence. The Pullman Co. may take the same course, or it may file another bill for a temporary injunction on new grounds. If the reduced rates are allowed to go into effect it will apply for a permanent injunction to set aside the order of the commission after a hearing. Judge Grosscup's opinion dismissing the Pullman Co.'s petition followed several hours' argument on the question of whether the Great Northern should be allowed to intervene. Mr. Lindley, representing the road, submitted affidavits to show that hauling Pullman cars in effect amounted to doubling car mileage, as the cars carry only half as many passengers as coaches, and that after crediting to this service its due proportion of all expenses the business returned no profit on the capital invested. The arguments of the Pullman Co. and of the Santa Fe and St. Paul roads were heard by the court about two weeks ago. Judge Grosscup, in delivering an informal opinion, disposed of the arguments of both the railroads and the Pullman Co. Addressing himself to the Great Northern attorney, he said: "You are asking a preliminary injunction on grounds you have admittedly never brought to the attention of the Interstate Commerce Commission. You have abundant time between now and the time the order goes into effect, on July 1, to bring your new evidence before the commission. Your arguments do not seem to us to afford a basis for holding up the order. You have not been diligent in using the opportunity you had to bring these facts before the commission. Our judgment is that we will not grant the application for a preliminary injunction. Railroads ought to take notice that we hesitate very much to have a case made before us that is not made before the Interstate Commerce Commission, and I hope we shall soon have a commerce court to relieve this court of many such cases." Turning to the Pullman Co. has brought to our attention a certain specific route from St. Paul to Fargo, on which it appears that small profits might be made under the order. That instance is of small account as compared with the entire service and no figures have been presented as to the effect on the whole service. That is not sufficient, and we will not grant an injunction as to that particular case. As for the other railroads we believe that the commission will recognize that what is a reasonable rate for one is for another; that rates across the continent should be uniform and that the Pullman case is tied up with that of the Great Northern."

RAILWAY REVIEW. - CHICAGO. SATURDAY JUNE 25. 1910.

The Sleeping Car Rate Case.

In its report on the application for a rehearing of the cases involving a reduction of sleeping car rates made public on June 22, the Interstate Commerce Commission sharply criticised the Pullman Company for not submitting to the commission all of the facts in the cases. Two days previously it was announced by the commission that, while a rehearing of the Loftus cases against the Pullman Company and the Great Northern Ry. would be granted, no stay in the order of the commission would be allowed. The order is to become effective on July 1. The commission, in its full report, points out that the orders of the commission were made on March 15, after an investigation extending over a period of nearly three years, yet the carriers involved—the Pullman Company and the Great Northern Ry.—the commission declares, "have seen fit to remain quiescent until within a few days of the time when the orders, by their terms, are to become effective." Then the commission, in its report, criticises the methods of the carriers in this fashion: "This method of procedure is not satisfactory, and, since the proceedings before the commission pertained to a matter of great importance and wide publicity, appears to be without adequate excuses. Nevertheless, the commission would now suspend the operation of the orders until such time as the additional evidence referred to could be introduced and passed upon, if convinced that such evidence would show the pertinent circumstances and conditions to be materially different from those indicated by the evidence considered when the orders were made. But under the circumstances the commission feels constrained to decline to postpone further the effective date of the orders." It is stated in the report that the date for rehearing will not be fixed "until the orders have been in force for a sufficient period of time, say three or four months, to enable the commission to obtain information concerning their effect." Assurance is given that if the results under the rates fixed indicate that a mistake has been made, the commission will not hesitate to make any change it may consider proper.

Steel Cars on the P. R. R.

According to an official anonuncement the Pennsylvania R. R. system has in service on its lines, or on order, nearly two thousand passenger cars of all-steel construction. These cars have been added to the Company's passenger equipment since June, 1906, when it was announced that all future additions to passenger equipment on the Pennsylvania System would be of all-steel construction. The lines of the Pennsylvania System, on all of which steel cars will be operated, include the Pennsylvania R. R. Lines East and West of Pittsburg and Erie, the Long Island R. R., the Cumberland Valley R. R., the New York, Philadelphia & Norfolk R. R., the Vandalia R. R., and the Grand Rapids & Indiana Ry. The Pullman Company is at present constructing a sufficient number of steel sleeping and parlor cars to equip the entire Pennsylvania system. These cars are now being delivered at the rate of from 50 to 60 a month. Already there are in service on through trains 75 sleepers, and 5 combined parlor and baggage cars. When the present order is completed there will be in service on the Pennsylvania System some 600 all-steel Pullman cars; this number is included in the 1988 cars now in use or on order. The steel passenger cars on the Pennsylvania System have been called "Dreadnaughts," by reason of their construction. They weigh some 118,500 pounds as against 85,000 pounds in the standard vestibule wooden coach. This increase in weight very greatly reduces the vibration of the car, thereby adding to the comfort of passengers. The car is non-collapsible, its principal feature being a central box girder twenty-four inches wide by nineteen inches deep extending throughout the entire length of the coach. This girder, in collisions, prevents telescoping. The car is fire proof, containing only abont 125 pounds of wood, the latter being used for window frames and arm rests in the seats. In the steel equipment now in service, there are 457 coaches, 22 dining cars, 34 passenger and baggage, 78 postal and 80 Pullman cars. In addition to these there are on order or under construction at the present time, 502 steel coaches, 28 steel dining cars, 83 passenger and baggage cars, 83 baggage, 39 postal, 28 baggage and mail, 1 combination motor car, and some 520 Pullman cars.

THE FINANCIAL AGE, NEW YORK. MONDAY APRIL 4. 1910.

Pullman Berth Rates
Under Consideration.

The old question of charges on Pullman sleeping car berths has again been taken up by the Interstate Commerce Commission. It is understood a report in the matter will soon be forthcoming, declaring that the rates are excessive and that reasonable dividends might be declared if charges were approximately half what they are at present.

RAILWAY AGE GAZETTE NEW YORK. FRIDAY. JULY. 15. 1910.

Reductions in Sleeping Car Rates Postponed.

The United States circuit court at Chicago issued an order on July 8 postponing the date on which the Interstate Commerce Commission's orders for reductions in sleeping car rates in the West are to go into effect, until the commission can rehear the case. The Chicago, Milwaukee & St. Paul, the Atchison, Topeka & Santa Fe, the Great Northern and the Northern Pacific were required to give bonds of $50,000 each and the Pullman Company to give a bond of $100,000 to refund to travelers after July 12 the difference between the present rates for berths and those finally fixed, in case a reduction is finally upheld by the courts. Within 20 days after the expiration of each month the roads must also turn over to the clerk of the circuit court the difference between their earnings on the present rates and what their earnings would be on the rates prescribed by the commission. The roads must also give each passenger a coupon stating the amount which he can recover by applying to the clerk of the United States circuit court in case the commission's order finally is upheld.

The court's order was issued after it had heard argumcnts by counsel for the roads mentioned, and the Pullman Company on a rehearing of a petition previously filed with the court and rejected by it, for an injunction restraining the commission from enforcing its order reducing the rates. Gardiner Lathrop, general solicitor of the Santa Fe, presented figures to show that when the cost of operation is apportioned between all cars his company loses an average of $85,000 annually on its California Limited. The Santa Fe has an arrangement with the Pullman Company by which they divide the earnings and expenses of operating sleeping cars. The St. Paul operates its own sleeping cars, and William Ellis, its commerce counsel, filed a statement indicating that it loses $500,000 a year on its sleeping car business. G. S. Fernald, of the Pullman Company, told the court that application of the rates prescribed by the commission would reduce the profit on its business between the St. Paul and Fargo, S. Dak., to 1.77 per cent. on the investment. The opinion of the court was written by Judge Seaman. The reasons for the court's decision are summarized as follows:

"Many interstate rates would be lowered and become permanent rates by operation of state laws provided the commission's interstate rates were put into force.

"A new element was introduced into the case by evidence tending to show that it cost the railways much more to haul a Pullman sleeper than it did to haul a day coach, and therefore the new rates might be confiscatory and effect a discrimination in favor of passengers in day coaches.

"The commission sought wrongfully to punish the railways for their failure to appear before the commission and defend the attack made upon Pullman berth rates, but the punishment was too drastic inasmuch as the operation of the new rates eventually might prove to be confiscatory.

"The commission intimated in its decision that it had taken judicial notice of facts not introduced nor appearing on the records of the case and in so doing substantially had denied the defendants a 'full hearing' provided for by the law.

"No tenable view was presented to show that a trial of the new rates for the period prescribed by the commission would serve as a reliable test of the assumed ultimate benefits or losses thereunder."

Judge Grosscup gave an oral opinion, supplementing the written opinion of Judge Seaman. Both judges criticized both the commission and the railways. The railways were criticized for not having introduced their evidence at the original hearing before the commission. The commission was criticized on the ground that although it evidently thought the new evidence that the roads proposed to introduce essential to a proper adjudication of the case, it refused, as a vindication of its authority and a punishment to the railways for their indifference, to stay the rates prescribed pending a rehearing. Counsel for the railways explained that they had not thought it necessary to introduce all their evidence at the hearing before the commission because they did not believe that those seeking a reduction of sleeping car rates had made a case.

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RAILWAY REVIEW.
CHICAGO, SATURDAY, JULY 16, 1910

Pullman Rate Reduction Stopped Injunction.

Judges Grosscup, Seaman, and Kohlsaat of the United States Circuit court, at Chicago, have issued an injunction on the motion of the Pullman Co. and the Great Northern Ry., restraining the Interstate Commerce Commission from enforcing its order to reduce Pullman rates and maintaining the present scale until thirty days after a final disposition of the case on a rehearing. This will require several months at least. The court declined to grant a preliminary injunction on the grounds set forth by the Pullman Co. that the commission had no power to fix sleeping car rates, but was influenced by the claims of the intervening railroads that their revenues also would be reduced without a full hearing of their evidence as to the excess cost of transporting Pullman cars. If the commission, on a rehearing, repeats its decision, the passengers who pay the present rates will be reimbursed by the amount of the excess. This applies to rates between Chicago and St. Paul and between St. Paul and Seattle, Fargo, Grand Forks, and Superior, which were affected by the order. The Pullman Co. and each intervening railroad must file a bond for the payment into court of all sums collected in excess of the rates fixed by the commission. Passengers will be given a coupon stating the amount of the excess and providing for its payment by the clerk of the court in the event of a decision upholding the original order of the commission. The Pullman Co.'s bond was fixed at $100,000 and that of the Great Northern at $50,000.

Twentieth Century Limited to Have New Steel Cars.

There are now under consideration by the Pullman Co. five complete steel trains for the Twentieth Century Limited on the Lake Shore & Michigan Southern R. R. The new cars will weigh about 140,000 pounds, making an increase of about 160,000 pounds in the train. An improved system of electric lighting will be installed. In the buffet smoking car there will be an innovation in the form of a shower bath. In this car there will be a system of ventilation by exhaust fans that will keep the air fresh at all times.

THE ILLINOIS CENTRAL CAR REPAIR SCANDAL.

WHEN the reports regarding the frauds in connection with the repair of cars belonging to the Illinois Central were first published, railway men received them skeptically. They were hard to believe, both because of the amounts of money said to be involved and of the prominence and previous good reputations of some of those against whom charges were made. But evidence has been piled upon evidence until whatever may be the results of the civil and criminal proceedings pending in the courts, there will be no doubt in the mind of the public as to what has taken place. Whoever may be the persons responsible for the conditions disclosed, no one can say anything of the conditions themselves but that they were equally disgusting and disgraceful. That a brazen conspiracy existed for a considerable time between certain officers and employees of the Illinois Central and certain car repair concerns to rob the stockholders of the Illinois Central has been established beyond a reasonable doubt. President Harahan deserves commendation for pushing the investigation of the frauds relentlessly and for instituting

September 8, 1910

One Nuisance Abated.

WELL done, Lehigh Valley! Ever since there have been dining cars, the porter has marched through the train with his "first call" and "last call," informing all that the dining car was in the rear. Even breakfast has to be announced in the same stentorian tones, though the best nap of some in the sleeper is disturbed. But the Lehigh has now put the muffler on the loud-voiced porter. One other improvement we would suggest: Why any announcement of meals at all? A neat sign or two hung up in each car, giving the hours and the kind of service offered, would serve every purpose and no one would be disturbed.

FRIDAY. SEP. 16, 1910.

civil and criminal proceedings against the alleged guilty concerns and persons.

While the details of the conspiracy and of its carrying out are being recounted in the courts, to the edification of a curious and sensation-loving public, is a good time for railway managers to consider the circumstances which gave rise to these frauds. They grew out of improper relations which had been formed by officers of the road—relations consisting in the ownership by them of substantial amounts of stock in companies which were paid to do certain work for the road. The road paid its officers to serve it to the best of their ability. It was their duty to get good work done for it at the minimum reasonable price. On the other hand, it was to their interest, as stockholders in the concerns which repaired the Illinois Central's cars, for these concerns to make the largest practicable profits. That they should get the work done for the road at the minimum reasonable cost and at the same time receive the maximum practicable dividends on the stock they owned in the car repair companies was impossible. Therefore, as men are apt to do in cases of that sort, they "made one hand wash the other." They used the offices of trust and responsibility, for the conscientious performance of the duties of which the stockholders of the Illinois Central were paying them, as means to filling their pockets with dishonest profits at the expense of the stockholders of the Illinois Central.

In one sense the conditions which have been disclosed were probably unique. We do not think that there is another railway in America in which grafting has prevailed recently on so magnificent a scale. But, in another sense, the conditions were not unique. The Illinois Central is not the only road with officers who have acquired interests adverse to those of its stockholders. The scandal in connection with the purchase of real estate for the Chicago & Western Indiana is still fresh in the public mind. When a railway officer owns a substantial amount of stock in a concern from which his road buys fuel or supplies, he is under a constant temptation, if he has anything to do with purchases, unfairly to favor that concern. Men of strict integrity and strong will firmly resist this temptation. But no man knows how strict is his integrity or how strong is his will until he has put them to the test. For his own protecton the railway officer who has anything to do with buying, directly or indirectly, should keep out of concerns from which his road makes purchases. There are plenty of other places where he can invest his savings and get as large *honest* profits. If a railway officer wants to go into the supply business he ought to get out of the railway business. The chances are that he cannot honestly serve both the railway for which he is buying supplies and the company from which he buys them; and if he does almost nobody who knows of his dual connection will give him credit for honesty.

The matter, however, is not one for settlement by the individual consciences of railway men. The railways of the United States are conducting their business in the white glare of publicity. They will have to continue to do so. To get a square deal from the public, their managements must be, as Caesar demanded that his wife should be, above suspicion. If the officers of a railway are allowed to become interested in concerns from which the railway buys supplies, a relation is formed which is extremely apt, as past experience has shown, to lead to frauds against the railway. Even if this does not result, such relationships are adapted to excite public suspicion; and public suspicion regarding such matters quickly develops into conviction. When the public is convinced that there is dishonesty in the management of one railway it promptly jumps to the conclusion that there is dishonesty in the management of all of them; when you talk now to the "man in the street" you find that he is taking the case of the Illinois Central as typical. If the public believes there is an evil in the management of railways, it does not strike merely at that evil, but it strikes at the entire railway system of the country. The fact that in the past the railways used passes, and in some cases less veiled methods of bribery, to influence legislation, did not merely arouse a public sentiment that demanded abolition of and punishment for these abuses, but it created a public sentiment which demanded wholesale reductions of railway earnings.

The termination and prevention of all improper or suspicion-exciting relations between railway officers and employees on the one hand and railway supply concerns on the other is a matter which, it would seem, should receive the attention of all those who exercise final authority over railway management. Such relationships, so far as they exist, afford a most inviting field for the exercise of the art of the "muckraker;" and we may be sure, the Illinois Central scandal having now directed his attention to that field, he will soon be down upon it with great energy and verbosity. The wise railway officer and the wise railway management will arrange matters so that he will find as little material and as few characters for the "muckraker's" new "School for Scandal" as practicable.

THE ILLINOIS MANUFACTURERS' ASSOCIATION

THE statement filed by William Duff Haynie, counsel for the Illinois Manufacturers' Association, at the rate hearing in New York on September 12, had all the characteristics of the public effusions for which this organization has become famous. If the Illinois Manufacturers' Association should ever, anywhere, issue or file a statement which was fair and devoid of hypocrisy it would indicate unmistakably to those who have followed its past career that it was falling into senile decay. It is perfectly well known that a large part of the members of the organization do not approve of the course in regard to railway matters which it has taken. In spite of all their efforts, however, it continues to be dominated by professional agitators who, incapable of discussing railway questions and trying railway cases on their merits, habitually resort in such discussions and in the trial of such cases to Pecksniffian protests against evil-doing, and to deliberate misrepresentations worthy of the cheapest political charlatan.

The statement filed at the New York hearing is worthy of the Association's most ignoble traditions. It bitterly berates the railways for having impaired their earnings by unfair discriminations in rates. Now, there is no question that the railways have been in the past and are now guilty of unfair discriminations in rates. The statement of the Illinois Manufacturers' Association on this subject is entitled to special respect. It is expert testimony. Many of the worst discriminations of which the railways were guilty in the past, and are guilty now, have been brought about by the unscrupulous pressure and for the behoof of concerns belonging to that Association. For example, the International Harvester Company is one of the leading members of the Illinois Manufacturers' Association. One of the unfair discriminations of which the railways are now guilty is that of giving this organization a stoppage-in-transit privilege on machinery, for which there can be offered no respectable justification. Frank B. Montgomery, traffic manager of the International Harvester Company, is chairman of the committee which is handling these rate advance cases for the shippers. Mr. Montgomery is a very amiable and a very able man. But we think, in view of the favors his concern is getting from the railways, he showed less than his usual discretion in allowing counsel for the Illinois Manufacturers' Association to read into the record charges against the railways of unfair discrimination.

The International Harvester Company is by no means the only member of the Illinois Manufacturers' Association which has received and is receiving unjust favors from the railways. A number of the large concerns belonging to it own tap line railways. Since the Illinois Manufacturers' Association invites investigation of the subject of unfair discrimination, we respectfully suggest that the Commission might make inquiry as to the reasonableness of the divisions of the through rates that some of these tap lines are receiving. And since the Association complains that the railways have depleted their revenues by the payment of fines for rebating, we suggest that it show its good faith

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A NEW IDEA IN SLEEPING CARS

Volume 30 Insert p85

BY M. M. HUNTING

Those who are forced to take advantage of the meager comforts of the railroad sleeping car will rejoice to learn that at least one transportation company is anticipating interference by law, and is providing the public with something novel in car service in proportion to what they pay.

With this new design of car, real comfort is furnished at the usual rates of the lower berth, while those who are willing to accept an "upper" find at least better accommodations than those provided by other cars, and at a reduced price to compensate for the difference.

A sleeping car on an inter-urban line is not an entirely new thing in this country, but such cars as are now being operated daily between Peoria, Ill., and St. Louis, Mo., are proving a boon to the traveler as well as something of a curiosity.

Upon entering a compartment to prepare for the night's rest, one finds that the bed to be occupied is folded snugly into the wall and that a chair, placed in a comfortable space, is waiting for the passenger. If the upper berth is not sold it is not let down, which permits of standing upright if desired. When ready to retire the cot is drawn out from the wall, and if tall, you will find to your great relief that it is six inches longer than any berth you have ever occupied, and permits of stretching out to full length.

The sleeping car berths are folded into the wall.

The pillows are kept in racks in the wall, and not packed on the floor as in most sleepers.

In the wall at the head of the bed is an electric light, which obtains its current from a storage battery and not from the trolley. With this arrangement the light burns with the same uniformity at all times, and makes it possible for one to read after retiring if wishing to do so.

A small wall safe is also provided in each compartment, for the protection of money or other valuables. This in itself is a unique and a valuable addition to the sleeping car. Upon arising in the morning the cot is again folded into the wall, and the small camp chair is again used while dressing. The toilet rooms at each end of the car are roomy and well equipped, and after the preparations for the day are over you return to your berth, when the thoughtfulness of the company surprises one still more, for you are served by a porter with hot coffee and rolls with butter, free of charge. We are told that he is amply paid, and the company does not permit him to accept any tips.

If during the night it has been your lot to occupy an upper birth, you find first of all that it has a window supplying light and fresh air. Besides this, the curtains for this berth cover it sufficiently to exclude the annoying glare of the chandelier, which is found in the ordinary sleeper.

The noticeable absence of cinders and smoke renders the trip an enjoyable one, while the company's forethought in having the sleeper drawn behind another car, so that the noise of the motors cannot be heard, leaves almost nothing to be desired that could be reasonably expected.

Cars leave both terminals of the road each night about retiring time, and arrive at their destination at a seasonable hour the next morning.

A NEW TYPE OF SLEEPING CAR WITH UNIQUE AND COMMENDABLE INTERIOR FEATURES FOR COMFORT IN TRAVELING.

A new method of constructing the foundations of buildings in order to prevent, as much as possible, earthquake shocks from being communicated to the buildings has been devised and patented by Dr. J. A. Calantarients, of Scarborough. In this system the foundation, which is built in the usual manner, is faced with hard material such as granite or iron, and upon this facing layers of talc, mica, or other smooth substances are deposited, each layer being dusted with powdered talc, mica, asbestos, soapstone, or sand, or mats of asbestos, etc., may be used without the plates of talc. Slabs of granite or iron placed on this prepared zone form the base of the superstructure. The object of the arrangement is, in the case of an earthquake, to allow the building to slide laterally. Means are provided for rendering the service pipes flexible at the point where they issue from the ground.

Paper from Grape-Vine Stems.

BY DR. ROBERT GRIMSHAW.

Although the grape industry is not one of the principal sources of wealth of America as it is in Germany and France, still the possibility of using waste material such as grape-vine stems should not be without interest in the States; and this possibility is offered by an invention that is giving the French and Germans great pleasure, especially as at the present time the wine industry is languishing in both countries.

Mons. Chaptal, professor of general and applied chemistry in the agricultural school at Montpelier, has been making extensive experiments concerning the possibility of making paper out of vine-stems. This is all the more welcomed, as the supply of raw material for paper-making is getting scarcer every year.

From the botanical point of view, the vine differs from ordinary tree branches only in a few unimportant details. The amount of cellulose in the two is about the same. For the manufacture of paper any substance can be employed which may be changed partly or wholly into fibers and form cellulose, and the fibers of which are sufficient. Concerning his experiments with the vine, Chaptal says he cut the dried stems into pieces of convenient length and treated them with hot diluted aqua regia (nitro-muriatic acid). The resulting product he triturated slightly with water and passed it through a sieve, obtaining a brown pulp composed of spindle-shaped fibers of cellulose of different but sufficient lengths. Treating the stems with alkalies gave about the same results. According to these experiments there can be obtained from dried stems, by suitable reduction in size, a product which answers all the requirements of a good paper pulp.

As regards the industrial and economic side of the question, La Nature gives some data concerning the comparative values of the different raw materials in France. The wood employed for paper-making, mostly fir, birch, aspen and sycamore (platana) costs Fr. 7.00 per cubic meter, or Fr. 2.00 per 100 kilogrammes. Assuming that the vine stems yield 50 per cent as much paper pulp, in proportion, as the wood, their worth would be at least Fr. 1.00 per 100 kilogrammes, which would correspond to Fr. 15 per hectare of vineyard.

The cost of manufacture would probably be higher than in the case of wood, as there would be more raw material required for an equal weight of pulp. As against this, the treatment of the vine-stems seems to be attended with less difficulty, and therefore to be more economical than that of wood; so that the total cost of manufacture would be in the two instances about the same, and the vine-stems should bring Fr. 1.00 per 100 kilogrammes. It would not, however, pay to transport them far, by reason of their low value in comparison to their bulk; so that the pulp must be made in the immediate neighborhood of the vineyards.

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The double advantage of the discovery or investigation—namely, the utilization of the vine-stems and the finding of a substitute for the rapidly diminishing supply of rags and other paper-making material—should make this subject of general interest.

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Volume 20 Insert p 285

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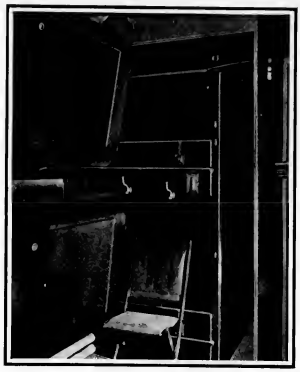

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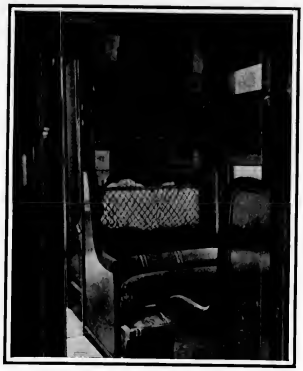

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RAILWAY REVIEW, - CHICAGO. SAT. NOVEMBER 12, 1910.

The directors of the Pullman Company have taken a step which should advance them in the public estimation. They announce a willingness to meet a reasonable demand for reduced sleeping car rates; and to be governed in this, to some extent, by the opinions of the Interstate Commerce Commission. This means that they will not oppose a lower rate for upper herths than for lower; and that if the commission reaffirms its decision in the Loftus case, the company will voluntarily make reductions based on that principle. Until such decision, the company could not well act or decide the plan on which reductions should be made.

Pullman Company is Willing to Modify Rates.

Following a meeting of directors of the Pullman Company, November 9, the board has announced to the Interstate Commerce Commission that on discussion of the recent order of the commission reducing rates on upper berths as compared with lowers, it has been decided to abandon further opposition to the plan, and the rates will be allowed to go into effect without contest. No action has been taken by the company toward establishing lower rates, however. The actual reduction of the rates depends on the action of the Interstate Commerce Commission on its rehearing of the evidence in the Loftus case involving rates out of St. Paul to Chicago, Seattle, Fargo and Duluth. In its order in this case, which has been enjoined pending a rehearing and the consideration of additional evidence, the commission ordered reductions in the upper berths and lesser cuts in the charges for lowers except to Chicago. If the commission in this case that is now pending reaffirms its previous decision and establishes the principle that there should be a differential in the rates for upper and lower herths, it is the sentiment of the board of directors that reductions should voluntarily be made in the rates throughout the country without waiting for further complaints or orders of the commission.

Comparison of Railway Passenger Rates in Europe and America.

In our issue of Nov. 5, 1910, we published an article taken from the Official Railway Guide on "Cost of Traveling by Rail in Europe and North America." In a letter by Mr. William E. Curtis, published in the Chicago Record Herald of Nov. 10, that gentleman remarks upon the same subject, as follows:

While agitators in the United States are trying to pass laws cutting railroad fares down to 2 cents a mile, the railways of Europe are advancing their charges almost every year, because of the advanced cost of fuel for their locomotives, and the increased wages for their employees. As the European railways are generally owned and operated by the government, this advance cannot be charged to overcapitalization, but is made absolutely necessary by the increased expense of operation and maintenance. There is no alternative. Government-owned railways are compelled to pay maximum wages, and their coal, lubricating oil, lumber, rails and other supplies for construction and maintenance cost just as much as is paid by a private purchaser. The government railways are not managed for profit, but public policy requires them to pay expenses and accumulate a sinking fund to redeem the bonds that were issued to build them. In order to do this, European railways very generally have been compelled to advance rates of fare and freight, and there has been no Interstate Commerce Commission to hear the complaints and protests of the public.

Second-class railway fares throughout Europe on the principal railways will now average per mile more than the first-class fares in the United States. First-class fares in Europe are about 30 per cent higher than first-class fares in the United States; third-class fares in Europe are about 40 per cent lower than first-class fares in the United States, but no one except newly arrived immigrants would ride third-class in this country. Sleeping car fares are from 20 to 30 per cent higher, and on "trains de luxe" 50 per cent higher, than in the United States, and there will always be a controversy as to the comparative comfort of the wagon-lit compartment cars of Europe and the Pullmans in the United States. It is purely a matter of taste.

It costs about one-third more for an American to travel the same distance in Europe than in the United States, let him go by the cheapest way he can, because he has to pay extra for his baggage, and the fees and tips that are demanded by porters at the railway stations, the servants at the hotels and other persons who help him along in his journey, must be counted in.

CHICAGO. - RAILWAY REVIEW, - SATURDAY, NOV. 26TH 1910.

American Red Cross First Aid Car.

Covering a wider field than the portable rescue station being put into service by the Bureau of Mines, a car will be put on the road by the American Red Cross Society about December 5, which will teach first aid to the injured work to railroad employees and employees of factories, as well as covering other ground where there is danger from accidents. While this car will cover a somewhat different field than the Bureau of Mines cars, it will do work in the mining districts, and also will be available in case of mine disasters. The car, which now is in Buffalo receiving its equipment, was presented to the American Red Cross Society by the Pullman Company. Dr. M. Whitfield Glasgow, of Birmingham, Ala., will have charge of the car.

Steps to Safeguard Railway Mail Clerks.

Unless railway mail cars are sanitary and safe in construction the postmaster general need not pay the railroads for the special car service, under authority granted in a recent act of congress, and Postmaster General Hitchcock has served formal notice on all railways that payment for special car

The Pullman Company is effecting a change in the designs of doors on all of its coaches which are now entering, or will enter, the new station of the Pennsylvania R. R. in New York City. The platforms of this station are on a level with the floors of the cars, this necessitating the shortening of the doors which now extend below the level of the vestibule platforms.

—The Union Pacific will erect a freight house and rearrange its freight terminal tracks at Denver, Col. The roundhouse and repair shops, built in that city in 1871, will be torn down and the site will be covered with tracks. The machinery will be moved to the Fortieth St. shops of the company, which are being vacated by the Pullman Palace Car Co. In addition to this the road will expend a large sum for new machinery.

Courteous Order Hearing.

Hearing was given on Nov. 17 by the corporation commission of Oklahoma upon its proposed order requiring courteous treatment toward the traveling public on the part of train employees, including employees of the Pullman Company. Appearing in protest against the order were delegations representing the railway conductors and the railway trainmen's brotherhoods. They do not object to the order, however, in event it is modified so that the commission will make an investigation to ascertain the facts before citation is issued, otherwise the order, they construe, will permit frivolous charges to be made against them by persons having grievances against the trainman personally, or against the railroad company. The commission was told that all train employees are peace officers under the Billups prohibition act, and that many infractions would be reported when the law is enforced against drinking, etc.

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RAILWAY REVIEW.
CHICAGO SAT. DECEMBER 3, 1910

Pullman Rates Reduced.

The Pullman Company has announced that in compliance with the agitation for a cheaper rate for upper than for lower berths, it has prepared a revision of its rates which will be submitted to the Interstate Commerce Commission. The new tariffs reduce about 20 per cent of the lower berth rates, and cut all of the rates for upper berths to 20 per cent below the rate for lowers. The minimum rate for uppers, however, is to be $1.25, and that for lowers $1.50. In announcing the proposed new schedules, all of which have not yet been completed, General Attorney G. S. Fernald of the Pullman Company said: "While the company does not admit that there is any difference in the value of the service, and while the upper berth costs more to construct and as much to maintain and operate, the company has become satisfied that there is a belief in the public mind that the upper is worth less, which has become so apparent that the company has decided to make the reduction, with no thought that it will increase the revenue by increasing the travel." Whether the Interstate Commerce Commission will accept the rates now submitted, or order further reductions will depend on its decision after hearing evidence to be introduced by the attorneys general of five states that have previously entered petition for reductions ranging as high as 50 per cent in the upper berths.

Fast Trains on the Central Railroad of New Jersey.

Coincident with the opening of the new Pennsylvania station in New York, the running time of all through trains on the Central Railroad of New Jersey will be cut to one hour and 50 minutes be-

Freight Cars.

—The Seaboard Air Line has bought 200 steel underframe, 40-ft. flat cars, from the Pullman Company, filling the inquiry noted last week.

Passenger Cars.

—The Seaboard Air Line has ordered ten first-class wide-vestibule, 70-ft. passenger cars, and three 70-ft. combination mail and baggage cars from the Pullman Company, filling the inquiry noted in these columns last week.

—The Baltimore & Ohio is reported to have placed orders for 50 all-steel passenger coaches, of which 30 will be built by the American Car & Foundry Co., and 20 by the Pullman Company. This fills in part the inquiry noted November 6.

RAILWAY AGE GAZETTE. CHICAGO-NY.
FRIDAY. DEC. 9. 1910.

Reductions in Pullman Rates.

G. S. Fernald, general attorney of the Pullman Company, on December 1 submitted to Commissioners Lane and Clark of the Interstate Commerce Commission at Chicago a proposition for a general reduction of about 20 per cent. in the rates for upper berths in sleeping cars and for some reductions in the rates for long-distance journeys in lower berths. Commissioners Lane and Clark were in Chicago to conduct a rehearing of the case brought by George S. Loftus against the Pullman Company, in which the commission ordered reductions in rates between Chicago and St. Paul and between other points in the Northwest. The reductions offered by the Pullman Company of the specific rates involved in the case are somewhat less than those ordered by the commission, but they include reductions not only of the rates involved in these cases but in rates throughout the country. The following are examples of the reductions proposed:

	Present rate,		Proposed rate—	
From Chicago to—	Upper and lower.		Upper.	Lower.
Boston	$ 5.50		$ 4.40	$ 5.50
New York	5.00		4.00	5.00
Pittsburg	2.00		2.00	2.50
St. Paul	2.00		1.60	2.00
St. Louis	2.00		1.60	2.00
San Francisco	14.00		10.40	13.00
Seattle	14.00		10.40	13.00
Denver	6.00		4.80	6.00
Washington	4.50		3.60	4.50
New Orleans	5.50		4.40	5.50
Galveston	8.00		5.60	7.00
San Antonio	8.00		6.00	7.50
St. Augustine	7.00		4.40	6.75
Atlanta	4.50		3.60	4.50
Kansas City	2.50		2.00	2.50

It will be noted that in all cases the price for the upper berth is 20 per cent. less than for the lower berth.

Pullman Car Rates and Conditions.

The *Wall Street Journal*, discussing the recent announcement of the Pullman Company that it would be willing to make a reduction in rates for the use of upper berths—a subject which is still under investigation by the Interstate Commerce Commission—says that the proposal of the company will provide for a difference of about ten per cent. in favor of the upper berths. This is much less than the differences named in the order which was issued by the commission a year ago.

Basing its statement apparently in part on facts brought out by the commission, and in part by statements of Pullman officers, the *Wall Street Journal* says:

RAILWAY AGE GAZETTE
NY & CHICAGO., FRIDAY. NOV. 18, 1910.

The Upper Berth.

The announcement that the Pullman company has decided to abide by the order of the Interstate Commerce Commission and charge a smaller price for upper than for lower berths will generally be hailed with satisfaction. Should the company in its generosity go so far as to fix the charge for the upper berth at three-fourths that of the lower there would be still further reason for gratification.

To charge the same for the second-story shelf, with which those who came late were obliged to content themselves as for a first floor reservation has always been unreasonable. The new arrangement will afford more economical accommodation to those compelled to consider the question of expense, and will likewise give larger opportunity to those whose architecture is such that without a derrick the upper berth closely approaches the unattainable.

There is a possibility, of course, that those who are compelled to take an upper berth, either for economic reasons or because they are too late to secure a lower, will be compelled to submit to a larger measure of contumelious scorn from the colored divinities who preside over the affairs of travelers by night; but even that may be, in a measure at least, averted by continuous and loudly uttered protestations at the cruelty of the fate which condemns one to travel up aloft.

For those whose accommodations are circumscribed by lack of opportunity rather than by lack of funds, the saving in actual financial outlay which will result from occupancy of the upper berth will at least permit of the purchase of one small measure of liquid consolation at the prevailing prices on Pullman buffet cars, so that considered from every point of view it seems a safe prediction that the traveling public will be happier because the Pullman company has kindly consented to heed the peremptory order of the Interstate Commerce Commission.—*New York Tribune.*

The Boston & Albany announces that new cars are to be provided for the B. & A. section of the 20th Century Limited trains, and that these trains will have a stenographer, a barber and a lady's maid. In connection with the publication of this announcement in the Massachusetts papers it is said that the average number of passengers on the 20th Century train from Boston to Albany is 14, and from Albany to Boston 19. These trains have been running since August 15, 1909.

The Chicago, Milwaukee & St. Paul, which owns and operates the sleeping cars used on its lines, announces that on the lines from Chicago to Minneapolis, Chicago to Kansas City and Chicago to Houghton, Mich., steel sleeping cars are now in use.

The announcements by the Pennsylvania Railroad that its ferry from Jersey City to Brooklyn, around the southern end of Manhattan, will be discontinued November 27, brings out the fact that this ferry is made use of by many truck wagons of large warehouses in Brooklyn. With no direct ferry these wag-

of bookkeeping, the mileage is included in repairs and maintenances.

Figures covering the operation of 38 cars between Chicago and Minneapolis, as presented at the last hearing, showed net earnings, $69,569, or 18.21 per cent. The St. Paul road's figures (on cars owned by the road) showed 9½ per cent. for the same period, the average cost of the cars being $19,609. During the year the St. Paul's sleeping cars are in service an average of 75 or 80 per cent. A small company could not do business by itself on the Pullman basis because most of the profit consists in the constant employment of practically all the cars by shifting the excess at one point immediately to places where demand exceeds supply, as it always does somewhere or other the whole year through.

Pullman records show that "car cleaning and washing" amounts to nearly $1,500,000 annually. Only 13 per cent. of the value of lost linen is collected from porters, the other 87 per cent. being "excused." The average porter's pay is $34 a month. Conductors get $85 or more. The vestibule patent expired five years ago and the Pullman Company now controls no live patents.

Hearing on the Buffalo, Rochester & Eastern.

At the hearing before the New York Public Service Commission, Second district, on the Buffalo, Rochester & Eastern Railroad, H. T. Newcomb of Washington, D. C., testified for the railways opposing the granting of a certificate of necessity.

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Following a general revision of its eastern schedule in 1908, the company immediately began a revision of all its western rates, the last of which changes took effect last January. The new revision, like the previous one, makes many reductions and some advances, with a net reduction of small dimensions. It became apparent to the Pullman people at the last rate hearing that public demand for differentials was irresistible. Eighty per cent. of the berths occupied in Pullman cars in this country during the past year have been lower berths. [Assuming all cars to have 24 berths, the average number of upper berths occupied would, therefore, be only three]. The earnings of Pullman cars have regularly increased in spite of business depressions, and at the present time there are fewer empty berths than ever before, because the supply of lower berths is less adequate than ever before. The receipts from cars for the fiscal year ending July 31, 1910, amounted to $35,365,321. The company's claim that potential competition was an important risk of the business has not been justified by the facts. No contract has been lost, while one new road, the Florida East Coast, has been taken on. No prominent road is proposing to operate its own sleeping cars. The average life of a sleeping car is twenty years; then it must become a passenger coach, a circus car or junk. During the past three years the number of cars owned by the company was 5,300 and the average number constantly in service was 5,000, of which 600 were tourist cars. The company has more than 100 compartment cars. Some of these are run on the 20th Century Limited express trains of the New York Central. This train last week left Chicago in two sections on five consecutive days. Two or three dozen Pullman cars are destroyed in wrecks each year. The Pullman officers say that few passengers would consider a differential of less than 50 cents an inducement to take an upper berth, if a lower berth were available. Pullman officers think a car ought to earn $7,000 a year. Between Chicago and Minneapolis, the following results per car per annum were shown:

Gross, $7,000; expenses, repairs, maintenance and 5 per cent. depreciation, $5,000; net, $2,000; percentage of net on $17,500 capital investment, 11.2 per cent. The averages for the country would be much less than this.

Contracts with 125 systems vary in form, but Pullman takes few chances under any contract. The average term is 15 to 20 years, with a 6-months' clause permitting termination at any time. Usually a road is charged $6,000 a year and if the car earns less a mileage of one cent per mile is assessed, but the railway has the option of making good the deficit on a cash basis. Mileage this year aggregated only $500,000, whereas a few years ago it exceeded $2,000,000. According to the company's system

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RAILWAY AGE GAZETTE, N.Y. CHICAGO. FRIDAY, DEC. 9. 1910.

PROPOSED REDUCTIONS IN SLEEPING CAR RATES.

THE Pullman Company has greatly disappointed the state attorney-generals and other politicians who have been running for office by trying to compel it to reduce its rates. It has offered to reduce the rates before the prosecutors and politicians have had time to get a reputation at its expense. Furthermore, it has offered to make reductions not only where they have been sought by formal proceedings but throughout the country. The Pullman Company ought to be indicted for cruel and inhuman treatment of politicians. How can they get credit for reductions made where they did not ask for them? The company plainly is seeking to dish the politicians. It is trying to get for itself credit from the public for reductions in its rates instead of letting others have it. This tendency to cultivate public opinion is getting chronic among large corporations. If it keeps up the public and the corporations may get together in spite of the statesmen. We are beginning almost to sympathize with the anti-corporation agitators. It looks as if the time is coming when they may have to change their business; and this for a man who knows how to do only one thing is very hard.

Of course, the attorney-generals of the states who have complained to the Interstate Commerce Commission about the Pullman Company's rates will not accept the reductions it offers. To do so might be good for the public, but it would not be good for them. You cannot successfully run for office on a platform constructed of popular acts done by those that you attack. The Interstate Commerce Commission seems apt to regard the matter differently. The reductions offered amount to about 20 per cent. for all upper berths and are not negligible for lowers. The differentials proposed between uppers and lowers would remove all ground for the complaints heretofore made, because the rates for them have been the same. It would seem also that, assuming the rates fixed for uppers are reasonable, ground for complaint about sleeping car rates in general would be abolished. For under the proposed arrangement the traveler might choose whether he would pay, say, $2 for one kind of sleeping accommodation, or $2.50 for another kind. If he chose to pay the extra 50 cents his action would afford conclusive evidence, it would seem, that the lower was worth 50 cents more to him. If he afforded such evidence, how could he rationally be heard to complain that the extra charge of 50 cents, which he did not have to pay, was an unreasonable exaction?

The demand for a differential between upper and lower berths is an interesting commentary on the question of cost of service versus value of service in rate-making. It costs more to build the upper berth into the car. It also takes more labor on the part of the porter to make it up. On the cost-of-service theory, therefore, the rate for the upper should be higher. But, regardless of differences in cost, people prefer lower berths. Therefore, the very public officials who denounce the railways for often disregarding cost of service demand that the Pullman Company and the railways shall disregard it in respect to sleeping car rates. To charge a higher rate for a lower than for an upper berth is, on the cost-of-service theory, an unfair discrimination. On the value-of-the-service theory it is perfectly proper, simply because people prefer lower berths.

It is an interesting question what effect the proposed change will have on sleeping car earnings and service. Heretofore most sleeping cars have been run with most or all of their upper berths empty. If it should develop that many of those who heretofore have bought lowers will in future buy uppers, and there be no increase in the total number of people using sleeping cars, the reductions in rates will result in reductions in earnings. If most of those who heretofore have bought lower berths to continue to do so, and the lower rates for uppers cause many persons who heretofore have stayed in chair cars to take sleepers, the result will be an increase in earnings. The latter result seems the more probable. If it takes place, the reductions in the rates will cause a deterioration in the value of the sleeping car service; not because the service given by the company will be different, but because, owing to the increase in the number of people in a car, there will be less room and less comfort for each passenger. In that event, the reduction in rates will prove a good thing for the sleeping car companies and a good thing for the additional people that it enables to take sleepers; but it will not be a good thing for those who would take sleepers without the reductions in the rates.

THE INTRODUCTION OF ALL-STEEL CARS.

BY W. H. RADCLIFFE.

The all-steel express trains recently placed in operation on the Pennsylvania Railroad are encouraging to the public in that the time is hastened when all-steel cars for both Pullmans and day coaches will be a reality, but are somewhat discomforting for those who ride in the wooden cars of local trains run on the same tracks as the all-steel express trains, and for those in the wooden cars of trains made up partly of wooden cars and partly of all-steel cars. There is less assurance of safety to them than in the case of express trains composed either entirely or in part of wooden Pullmans.

That there is reason for discomfort is proved by the fact that collisions between trains composed of both steel cars and wooden cars result in the almost complete destruction of the wooden cars, with but little, if any, damage to the steel cars. In fact, the excellent showing of steel cars in collision is made possible by the wooden cars forming a part of the trains; the wooden cars being weaker than those of steel act as cushions, and by becoming crushed, modify the force that otherwise would be exerted on steel cars.

Although the same conditions exist in a more modified form in a train composed of wooden day coaches and the stronger wooden Pullman cars, and also between a train made up entirely of wooden Pullmans and a train made up entirely of wooden day coaches, the strengthening of the Pullmans by all-steel construction, without proportionally strengthening the day coaches, still further protects the passengers in the Pullmans at the expense of those in the day coaches.

When both local and express trains become entirely composed of steel cars a collision will not mean the same immunity from death or injury that the occupants of steel cars have hitherto enjoyed, for it is probable that these cars, if of approximately the same strength, will in certain collisions be crushed or telescoped—at any rate they would certainly not carry off the honors which are now literally thrust upon them.

It is not the intention of this article to discourage the exclusive use of steel cars on passenger trains, but rather to urge that the period of transition from wooden to steel cars be made as brief as possible. The greatest good is that which benefits the largest number of people, and in no direction could all-steel car construction be better applied than on steam railways, where, as previously mentioned, Pullman passengers are made safe from collisions on account of the greater risk incurred by the occupants of day coaches. The all-steel cars also reduce the fire risk to a minimum, which so often adds to the horrors of a collision.

The decrease in our timber supply and the continued demand upon our forests make desirable, wherever practicable, the substitution of metal for wood. The great quantities of lumber employed in the building of cars is already a heavy drain on our forests, and it would be well if other railways followed the example of the Pennsylvania in adopting all-steel car construction, and used it not only for the Pullman cars but for the day coaches as well.

RAILWAY REVIEW. CHICAGO. SATURDAY, DEC. 10. 1910

Regulations as to Wooden Cars in Pennsylvania Tunnels.

The Pennsylvania R. R. has issued an order stating that as a temporary arrangement and until otherwise ordered, Pullman cars of foreign roads that are of wood, will be accepted for movement over the tunnel lines of the Pennsylvania between Manhattan transfer and the Pennsylvania station in New York, provided they do not carry gas, gasoline or oil as illuminants. Fires in coal or charcoal ranges must be extinguished before entering the tunnels under the Hudson river. It is further required that all except private cars must have vestibule and trap doors, so arranged that the vestibule side door may be opened over the top of the trap doors. No other wooden cars will be accepted. All equipment to New York or over the Long Island must be of steel. All wooden cars will be transferred for those of steel at some point en route, preferably Pittsburg, Harrisburg and Washington, D. C.

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RAILWAY AGE GAZETTE
CHICAGO & NEW YORK. FRIDAY. DEC. 16. 1910.

The Upper Berths.

The papers are cheering rather loudly about the great victory over the Pullman company; but it happens that there are experienced travelers who ask for the upper when they journey; it has its advantages. But the meanest thing is the order that when a passenger buys a lower berth the porter who makes it up for him must at the same time drag down and make up the upper unsold and undesired. It is the same in principle as if the railway required the brakeman to dump a bag of potatoes beside every passenger in the ordinary coach who had a seat all to himself, the bag to be left there until somebody came along who needed the place, unless the pasenger could produce two tickets. The only defense that has been attempted for this extortion is that otherwise porters will for a bribe leave the uppers up and discourage those who would buy them. But the idea of kicking at the public giving money to Pullman porters; it's the way those fellows get their pay and the company knows it.—*Hartford Courant.*

RAILWAY REVIEW.
CHICAGO SAT. DEC. 24. 1910

Interstate Commerce Commission Accepts New Pullman Rates.

The Interstate Commerce Commission in a report made by Commissioner Franklin Lane has fixed the charge for upper Pullman sleeping car berths at 80 per cent of the charge made for lower berths, and has given tentative approval to the new schedule of rates filed by the Pullman Company to go into effect throughout the entire United States on or before January 20 next. The Pullman Company has accepted, as shown in this schedule, the conclusions of the commission in what are known as the Loftus cases, that the rates for long distances on lower herths should he reduced and that all upper herth rates should he reduced. It is estimated that the reduction which will be made upon all of the lines over which Pullman cars are operated in the United States, which include all of the main line railroads of the United States excepting the New York, New Haven & Hartford, the Great Northern, and the Chicago, Milwaukee & St. Paul roads, will effect a net reduction of nearly $1,500,000 annually. The new rates for the lower herths appear to he hased upon a charge of $2 for a 12-hour run, excepting on some of the fastest trains, the upper herth rate heing 20 per cent lower than the newly established rate upon lower berths.

RAILWAY AGE GAZETTE
NY & CHICAGO, FRIDAY. JAN 27. 1911.

The reductions in sleeping car rates, which have been under consideration for several months, have been announced by the Pullman Company to go into effect Feb[illegible]y 1. The tariffs filed provide that where the lower berth rate is $1.50 the upper berths will be $1.25, and where the lower berth rate is more than $1.50 the upper berths will be 20 per cent. less. The minimum rate for lower berths will be $1.50, and that of upper berths $1.25.

RAILWAY AGE GAZETTE
NY & CHI. FRIDAY. DEC 30. 1910

In April the commission held that the rates of the Pullman Company were unreasonable and that the company should make some reductions in the rates for lower berths and should establish a differential between the rates for upper and lower berths. Chairman Knapp and Commissioner Harlan dissented. The order of the commission applied only to rates between Chicago and St. Paul and between points in the Northwest. The Pullman Company got a hearing, and announced when the commission convened in Chicago to hold it that the company had decided to make quite substantial reductions in rates for lower berths throughout the country and to establish a differential between upper and lower berths which would make the upper berths about 20 per cent. cheaper than the lowers. The commission has announced that it has tentatively accepted the reductions proposed by the Pullman Company. The net reduction will be, it is estimated by the commission, about $1,500,000 annually.

Reduced Pullman Rates Approved.

State of Oklahoma; State of Iowa et al v. Pullman Co. et al. Opinion by Commissioner Lane:

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RAILWAY REVIEW.
CHICAGO. SAT. FEB 4. 1911.

Reduced Pullman Rates.

The reduction in Pullman herth rates, country-wide in its scope, went into effect at midnight, Jan. 31, as a result of which a charge of 20 per cent less for upper herths will be made hereafter, and between 25 cents and $1 will he deducted from the former scale on about 20 per cent of the total number of lower herths. The cut in prices which was made hy the Pullman Company after proceedings relative to the matter had been carried on at some length before the Interstate Commerce Commission, means a reduction in its revenue of about $1,700,000 a year. The new rules provide that where the lower herth rate is $1.50 the upper shall he $1.25 and where the lower herth charge is in excess of $1.50 the upper shall he 20 per cent less. Ticket sales for the first day remained about normal, heing explained on the ground that the traveling public had not yet become generally aware of the saving possihle in choosing the upper berth.

RAILWAY REVIEW.
CHICAGO, SAT. JAN. 28, 1911

Reduction in Sleeping Car Rates.

Reductions in sleeping car tariffs, effective quite generally throughout the country on Feb. 1, have been announced by the Pullman Co. Taking the hint from the recent action of the Interstate Commerce Commission and several state railroad commissions in insisting on reduced rates in both lower and upper berths, especially the latter, the sleeping car company not only forestalled any further governmental action, but actually went the federal commission one better by adopting in several instances a lower schedule than was demanded. Tariffs as filed provide that where the lower berth rate is $1.50 the upper berth rate will be $1.25, and where the lower berth rate is more than $1.50 the upper berth rate will be 20 per cent less. The minimum rate for lower berths will be $1.50 and that of upper berths $1.25. Another entirely new feature of sleeping car rates is the putting in of an intermediate lower berth rate between the even dollar and half dollar. Heretofore the rate of $1.50 would carry for a certain time and distance with the next higher rate advanced to an even $2, the next $2.50 and so on. In the new tariffs rates of $1.75, $2.25, $2.75 and so on upward have been put in wherever it was necessary to bring about an equalization of the lower berth rates. According to G. S. Fernald, general attorney for the Pullman company, the new tariffs are with three or four exceptions wholly voluntary on the part of the sleeping car company. He is quoted as follows: "The Pullman Company every few years has made a complete revision of its tariffs. Even before the present agitation by the public we had started a comprehensive study of the situation and the tariffs just filed are a concrete result of it. The complete tariffs were forwarded to the Interstate Commerce Commission on Jan. 21. The tariffs are in accordance with the plan of revision throughout the country, which was laid before Commissioners Lane and Clark at a hearing of all the sleeping car rate cases in Chicago in the early part of December. The revisions in rates and reductions made are voluntary on the part of the Pullman Company except in three or four specific rates which were passed on by the commission in the Loftus cases. As was stated at the hearing, the commission having established the principle of a differential rate in favor of the upper berth and the public generally considering the upper berth worth less for occupancy than the lower, the Pullman Company has extended the idea of the differential rate throughout the country and has thereby saved the necessity for further complaints or further action by the commission in extending it. It costs the Pullman Company more to build, maintain and operate the upper berth than the lower. Notwithstanding this the public seems to evince a belief that they should not pay as much as they do for a lower berth, and we have heeded this public sentiment by making this horizontal reduction throughout the country."

—The Pullman Company has declared its regular quarterly dividend of two per cent, payable Feb. 15 to stock of record Jan. 31.

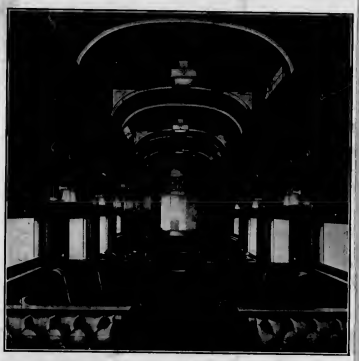
—The report of the American Brake Sh[illegible] &

PULLMAN EQUIPMENT FOR THE CHICAGO GREAT WESTERN.

The Chicago Great Western has recently received several Pullman cars containing a number of improved and original features. The principal novelty is the ladies' observation parlor which forms a part of the new steel compartment sleeping car,

Ladies' Observation Room.

and is intended for the exclusive use of women passengers. It is 18 ft. long, and is furnished with luxurious chairs upholstered in frizette of goat's hair, and furnished in a delicate shade of green. A stenographer's cabinet, book cases and a magazine



Lounging Room in Men's Club Car; Chicago Great Western.

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RAILWAY REVIEW.
CHICAGO, SAT. JAN 28, 1911

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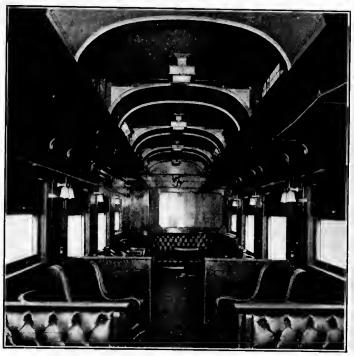


Lounging Room in Men's Club Car; Chicago Great Western.

NY + CHICAGO.

HILL TRACK LEVEL.

The Burlington is using a combination track gage and level of a new and novel design, the idea originating with James J. Hill and having been worked out under his direction. As shown in the illustration, it consists of a rectangular base built of 1-in. steel tubing and mounted on four wheels, the wheels being 6 in. in diameter, with ¾-in. flange. The distance out to out of flange is exactly the track gage. On this base a pyramid of ¾-in. tubing is built, with a horizontal cross bar at about one-half the height, to which a level bubble is attached. A pendulum is also pivoted on the same cross bar, the lower end being

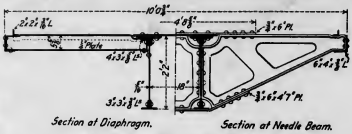
Hill Track Level.

weighted and the upper end running to a point and moving along the arc of the circle, which is fastened to the frame near its top. On level track the pendulum points to zero, the arc of the circle being so graduated that the difference in elevation of the two rails is correctly indicated on the dial, the smallest reading being 0.2 in. By pushing this over the track the foreman is able to check his gage, while the dial reading indicates high or low spots on tangent or the elevation on curves. When not in use the pendulum can be held rigid by a thum screw at the base. About 35 of these instruments are now in use on the La Crosse division, having been built in the company's shops. A patent has been applied for.

The Hungarian authorities have been contemplating an increase in passenger fares. The famous zone tariff, introduced in 1889, made a very great reduction from the high rates previously charged, especially for long-distance travel, of which there had been very little. It is not so generally known that this zone tariff has been raised three times since it was first introduced, with no bad effect on the amount of traffic. The average per passenger mile, however, remains very nearly as low in Hungary as in Austria and Germany, although the travel is much less, and the cost, therefore, greater. When the zone tariff was introduced it was thought that one of its effects would be to fill the trains better, and it had that effect at first: only 24 per cent. of the seats were occupied in 1888; for a short time after the zone tariff was applied the proportion increased to 34 per cent.; then decreased from year to year until it is now about 23 per cent. It is also suggested that when the tariff is changed the zone system be abandoned, and changes be made according to distance, though, perhaps, not in proportion to distance, the rate per mile decreasing somewhat for the greater distances, as is now the case in Italy.

STEEL SLEEPING CARS FOR THE ST. PAUL.

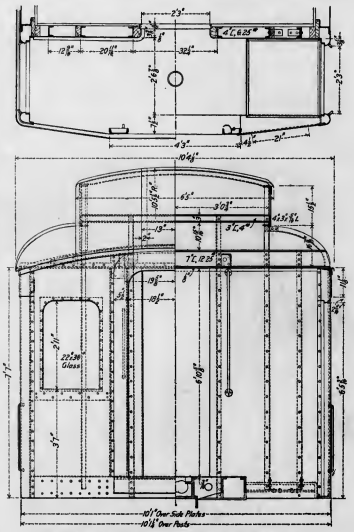
The Chicago, Milwaukee & St. Paul recently received 59 steel sleeping cars from the Pullman Company. These were part of an order which included 59 steel coaches, 20 dining-cars, 8 tourist cars and 4 parlor cars. They are 72 ft. 6 in. long and 10



Section at Diaphragm. Section at Needle Beam.

Section Through Underframe.

ft. 1 in. wide over the sills, the width being 5 in. greater than the Pullman standard section. This is in accordance with the regular practice of the road. The construction of the underframe is similar to that used by the Pullman Company for the Pennsylvania Railroad. The two center sills are plate girders



Part Elevation, Section and Plan of Vestibule.

2 ft. 2 in. deep, made up of 4 in. × 3 in. × ⅜ in. upper angles, a 5-16 in. web, 3 in. × 3 in. × ⅜ in. lower angles, and a continuous cover plate on the top, 30 in. × ½ in. The center sills extend between the cast steel double bolsters at the ends, which are composite steel castings, including the bolster and platform. The side sills, 6 in. × 4 in. × ⅜ in. angles are tied to the center sills by two needle beams built up of steel castings and by the

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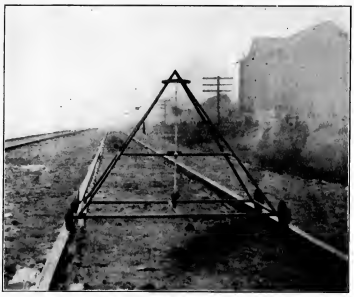
A

HILL TRACK LEVEL.

The Burlington is using a combination track gage and level of a new and novel design, the idea originating with James J. Hill and having been worked out under his direction. As shown in the illustration, it consists of a rectangular base built of 1-in. steel tubing and mounted on four wheels, the wheels being 6 in. in diameter, with ¾-in. flange. The distance out to out of flange is exactly the track gage. On this base a pyramid of ¾-in. tubing is built, with a horizontal cross bar at about one-half the height, to which a level bubble is attached. A pendulum is also pivoted on the same cross bar, the lower end being



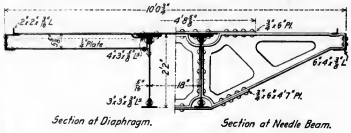
Hill Track Level.

weighted and the upper end running to a point and moving along the arc of the circle, which is fastened to the frame near its top. On level track the pendulum points to zero, the arc of the circle being so graduated that the difference in elevation of the two rails is correctly indicated on the dial, the smallest reading being 0.2 in. By pushing this over the track the foreman is able to check his gage, while the dial reading indicates high or low spots on tangent or the elevation on curves. When not in use the pendulum can be held rigid by a thum screw at the base. About 35 of these instruments are now in use on the La Crosse division, having been built in the company's shops. A patent has been applied for.

The Hungarian authorities have been contemplating an increase in passenger fares. The famous zone tariff, introduced in 1889, made a very great reduction from the high rates previously charged, especially for long-distance travel, of which there had been very little. It is not so generally known that this zone tariff has been raised three times since it was first introduced, with no bad effect on the amount of traffic. The average per passenger mile, however, remains very nearly as low in Hungary as in Austria and Germany, although the travel is much less, and the cost, therefore, greater. When the zone tariff was introduced it was thought that one of its effects would be to fill the trains better, and it had that effect at first: only 24 per cent. of the seats were occupied in 1888; for a short time after the zone tariff was applied the proportion increased to 34 per cent.; then decreased from year to year until it is now about 23 per cent. It is also suggested that when the tariff is changed the zone system be abandoned, and changes be made according to distance, though, perhaps, not in proportion to distance, the rate per mile decreasing somewhat for the greater distances, as is now the case in Italy.

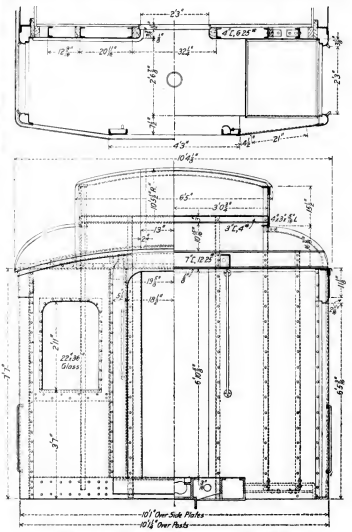
STEEL SLEEPING CARS FOR THE ST. PAUL.

The Chicago, Milwaukee & St. Paul recently received 59 steel sleeping cars from the Pullman Company. These were part of an order which included 59 steel coaches, 20 dining-cars, 8 tourist cars and 4 parlor cars. They are 72 ft. 6 in. long and 10



Section Through Underframe.

ft. 1 in. wide over the sills, the width being 5 in. greater than the Pullman standard section. This is in accordance with the regular practice of the road. The construction of the underframe is similar to that used by the Pullman Company for the Pennsylvania Railroad. The two center sills are plate girders



Part Elevation, Section and Plan of Vestibule.

2 ft. 2 in. deep, made up of 4 in. × 3 in. × 5/16 in. upper angles, a 5-16 in. web, 3 in. × 3 in. × 3/8 in. lower angles, and a continuous cover plate on the top, 30 in. × ½ in. The center sills extend between the cast steel double bolsters at the ends, which are composite steel castings, including the bolster and platform. The side sills, 6 in. × 4 in. × 3/8 in. angles are tied to the center sills by two needle beams built up of steel castings and by the

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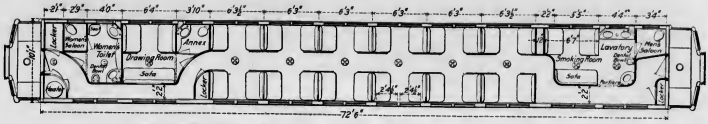
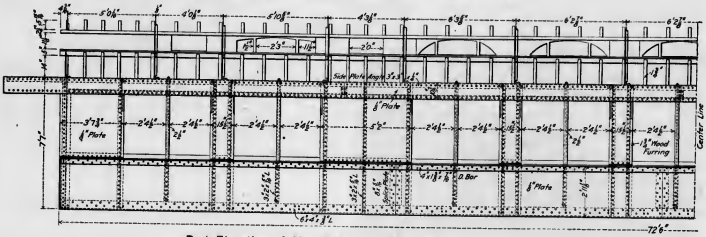
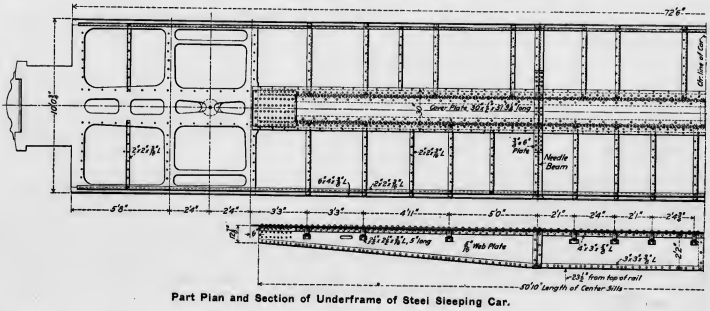


Plan of Steel Sleeping Car; Chicago, Milwaukee & St. Paul.



Part Elevation of Side Framing of Steel Sleeping Car.

Steel Sleeping Car; Chicago, Milwaukee & St. Paul.



Part Plan and Section of Underframe of Steel Sleeping Car.

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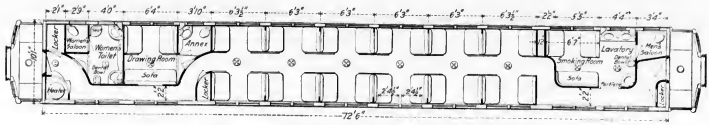
B



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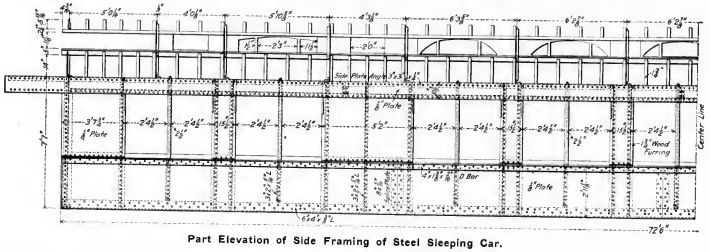

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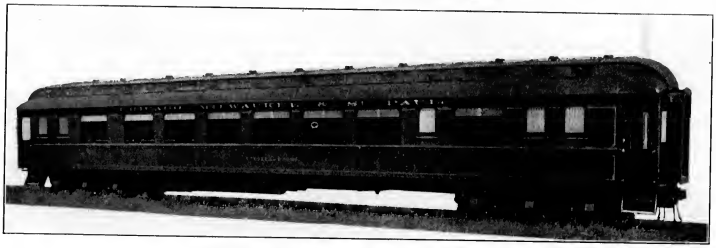
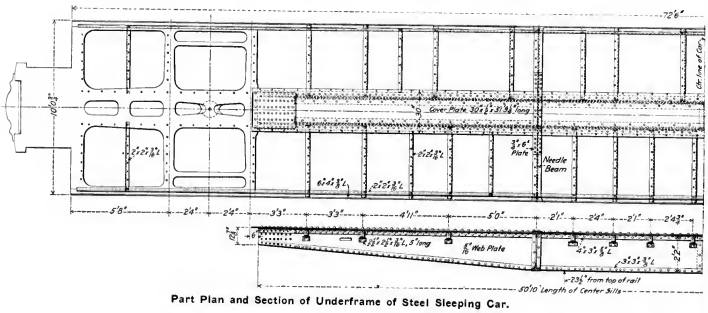


Steel Sleeping Car; Chicago, Milwaukee & St. Paul.



Part Plan and Section of Underframe of Steel Sleeping Car.

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B

diaphragms. The illustrations show clearly the underframe construction; also the steel super-structure and the vestibule, which is in accordance with the Pullman standards. The side construction, which is shown in detail, is made up entirely of rolled sections, principally angles; the belt rail is a 4 in. × 1⅜ in. × 7-16 in. angle, and is connected to the side sill angles by 3 in. × 2 in. × ¼ in. vertical angle posts. The floor is built up of 1-16 in. steel plates, corrugated longitudinally; hair felt insulation; wooden furring strips, Keystone flooring and is covered with a layer of Flexolith.

On the inside the sleeping compartment contains 12 Pullman sections. It is finished in Cuban mahogany, the men's smoking

Interior of Steel Sleeping Car; Chicago, Milwaukee & St. Paul.

room and lavatory in English oak, the drawing-room in Koko wood and the women's toilet in Vermillion. The arrangement of these compartments is shown in the plan. The decorations consist of inlaid wood, and "twentieth century" style color work for the ceilings. A dynamo in the baggage car and the railway's standard storage batteries furnish electric light. An auxiliary gas lighting system is provided, and the Chicago Car Heating company's vapor system of heating is used.

The six-wheel trucks have 38 in. Paige wheels, and weigh 21,000 lbs. each. The car body weighs 110,300 lbs., which makes the total weight 152,300 lbs.

Nearly all of the Japanese railways were built as narrow-gage lines, which in a country almost without wagon roads, seemed to serve every purpose. Experience in the Russian war, however, has convinced the authorities that they are not effective when a heavy traffic must be handled, and it has been determined to make the whole lines from Tokio southwest to Shimonoseki, opposite Corea, of 4 ft. 8½ in. gage, and also the road in Corea, from Fusan, opposite Shimonoseki, by Seoul to the Manchurian border at Wiju. The line thence to the South Manchurian railway has already been changed. The line from Tokio to Shimonoseki is 801 miles long; the Corean line about 500; and that connecting it with Siberian line about 150. Traffic with the Siberian and the Chinese railways can be exchanged much better by sea than by this long line, the direction of which is southwest from Tokio to the straits, and thence northwest. Aside from the local traffic, strategical reasons have doubtless determined the change, which is to be completed in 13 years.

EXTENSION OF THE SIBERIAN RAILWAYS.

It is reported that the Russian government contemplates the improvement of the existing Siberian railway and creating duplicate approaches both in European Russia and the Far East. When these works are completed, in 1915, the imperial treasury will have expended on the Siberian railway somewhat over $1,000,000,000, which includes both cost of construction and loss on exploitation. In exchange for this Russia will have a complete double-track system from the Ural mountains to the Pacific, with double approaches, of a total length of 6,844 miles. During 1910 the Ministry of Communications introduced into the Duma three bills providing for parts of this vast work. The first is to double the Baikal-Kultchuk section of the Circumbaikal railway, the second is concerned with the eastern part of the new Amur railway, and the third is for double tracking the existing Transbaikal railway. The most important work strategically is the Amur railway, which will supply Russia with communication with the Far East, running through Russian territory alone, as against the existing Chinese Eastern line. The new Amur line will be 1,344 miles long, and, as officially estimated, will cost $121,050,000, but including rolling stock, and guarding during construction, the cost is put at $149,244,000. With the completion of this work, which has been two years in hand, Russia will for the first time have railway communication with the Far East lying entirely in native territory. The second great work under way is connecting St. Petersburg, Russia, and the European Northern railway system with the main Siberian line, the chief approach to which has hitherto been through Moscow and Central Russia. This new line runs through the towns of Perm, Ekaterinburg, and Tyumen, and joins the Siberian railway at Omsk. The section from Perm to Ekaterinburg is finished. The total cost of this new approach and incidental improvements will be $43,243,000. Doubling and improving the existing track of the Siberian railway is the next work. This was begun in 1907. For three sections of doubling work, and for reconstructing the hilly parts of the Eastern Siberian railway, between Atchinsk and Irkutsk, the Ministry of Communications has asked for $82,309,000, but in addition there are sections for which no estimates have yet been prepared. Adding these costs, calculated on the basis of past outlays, the Russian engineer, Mikhailovsky, puts the cost of reconstructing the existing Siberian line at $97,966,000. This makes a total cost of new works undertaken during the past three years of $290,453,000. Engineering defects in the line will remain in steep gradients in the Transbaikal railway, which require double traction, a large number of short curves, and wooden bridges over the narrow rivers, which are constantly destroyed by fire. The correction of these defects will bring the total to $302,210,000. The statistical department of the Ministry of Communications put the construction outlay up to 1907 on the Siberian and Manchurian railways at $422,412,000. The losses on exploitation during the 14 years which have elapsed since 1896, when the western section of the Siberian line was opened, are given at $211,693,000. The exploitation losses for the six years which will elapse before the present schemes are finished will amount to about $60,831,000. This makes the total cost of the completed Siberian Railway $997,146,000, or about $146,827 per mile, notwithstanding that practically no compensation had to be paid for land, and that more than half the line runs through flat territory.

No new lines were opened for traffic in the Transvaal, South Africa, during 1909, but the construction of the following lines, with an estimated length of 504 miles, was authorized and is now in hand: Pietersburg to Bandolier Kop, 70 miles; Welverdiend to Saltpans, with branch line to Lichtenburg, 146 miles; Ermelo to Piet Retief, 70 miles; extension of Selati line to Tzaneen, 140½ miles; Benoni-Welgedacht line, 18½ miles; Waterworks-Wepener line, 59 miles. All the above are in the Transvaal, except the Waterworks-Wepener line, which is in Orange River Colony.

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CHICAGO, SATURDAY, MARCH 4, 1911.

(h) Tin manufacturing department (in gallery)	4,000
(i) Air brake and brass department (in gallery)	4,000
(j) Electrical repair department (in gallery)	1,500
Total	117,500
Boiler and tender shop building:	
(a) Boiler department	9,900
(b) Boiler machinery department	13,200
(c) Tube and ash pan department	8,400
(d) Tender department	9,900
(e) Tender truck department	4,800
Total	46,200
Smith shop building:	
(a) Smith department	18,000
(b) Spring department	3,600
(c) Bolt department	3,600
Total	25,200
Paint and wood shop building:	
(a) Paint department	10,800
(b) Wood department	10,800
Total	21,600
After-trial shop	12,600
Power house	30,400
Storehouse	28,800
Paint and oil storehouse	8,000
Office building	8,000

To provide space as above, the general dimensions of these buildings will be as follows:

Erecting and machine shop, 210 by 500 ft. (with 25 ft. gallery).

Boiler and tender shop, 210 by 220 ft.

Smith shop, 90 by 280 ft.

Paint and wood shop, 120 ft. by 180 ft.

After-trial shop, 60 by 190 ft. (with offset 15 by 115 ft.).

Power house, 95 by 160 ft. (one story and basement).

Storehouse, 60 by 160 ft. (two stories and basement).

Paint and oil storehouse, 50 by 80 ft. (one story and basement).

Office building, 50 by 80 ft. (one story and basement).

The arrangement of tracks is of great importance, and should be given careful consideration. Upon it depends, to a greater extent than is generally realized, the successful operation of the plant. The limits of this paper will not permit of a detail study of the track arrangement, and we will, therefore, simply call attention to the functions as follows:

First; the movement of locomotives to and from shop, involving the drawing of the fires and the separation of tender from engine; second, the movement of engines into erecting shop, or to storage tracks; third, the movement of tenders to boiler shop or to storage tracks; fourth, the movement of repaired engines to after-trial shop; fifth, the movement of repaired tenders to after-trial shop or to storage track; sixth, the trying of locomotives; seventh, the movement of material cars to and from the shop, and the placing of same for unloading; eighth, the necessary shifting of cars to various parts of the shop yard, and ninth, the movement of scrap from the various buildings to the scrap bins; the receipt and unloading of cars of scrap from outside points; and the loading and shipping of scrap which is sold. The track arrangement should be such as to allow of these various operations being carried on without interference and without undue loss of time.

What Percentage of Creosote Oil Can Be Withdrawn from Wood by Subsequent Vacuum?*

The writer thought that the best way to check the experiment made and discussed last year would be to make some experiments, more on the order of laboratory tests rather than on the commercial order; so the following set of experiments were evolved, and which are submitted without comment.

Some thoroughly dried ties were weighed carefully and then put in the cylinder, and the door tightly closed. The cylinder had a capacity of three ties, and on top of the cylinder at the highest end (as the cylinder was on a slight slant), there was connected a small pipe extending about a foot above the cylinder, so that when filling, the fact that the cylinder was absolutely filled could be ascertained, as the creosote was allowed to flow into the cylinder until it came out of this pipe in a solid, liquid stream, thus showing that there was no foam or air left in the cylinder, after which the valve just above the top of the cylinder was closed.

The cylinder was filled entirely by gravity, no vacuum being produced before filling, and the creosote was allowed to enter the cylinder very gradually so as to produce as little foam as possible. There was also a small pipe connected with the bottom of the cylinder at the lowest point, which was used to catch all drippings, as the cylinder was on a slight slant, as before mentioned.

After filling, a pressure of 100 lbs. per sq. in. was applied for three hours, and steam circulated in the steam coil, keeping the temperature at 180° F. The creosote was then withdrawn as completely as possible, and the ties immediately taken out and weighed, being set in tin troughs on the scales which would catch all drippings, and then allowed to stand in the air for one hour, still in the tin trough, after which the ties were reweighed, and the drippings in the troughs, and the drippings from the cylinder after the ties were removed were weighed, so as to check the drippings of the ties. In all cases this checked very closely. The ties were then returned to the cylinder and heated to the same temperature as before removal, and a vacuum of 25 ins. applied for one hour, and this vacuum was obtained in about three minutes, due to the small capacity of the cylinder.

After this vacuum, air was admitted to the cylinder, and the oil extracted was alowed to run through the small pipe under the cylinder, and was caught and weighed. The ties were removed from the cylinder and weighed, being again set in the tin troughs which had been cleaned of the former drippings. The drippings from the cylinder, and the drippings in the troughs, were weighed to check the weight of the ties after the vacuum, and the results stated in the accompanying tabulation were obtained. The writer performed some experiments along this line about 15 years ago, that is, the extraction by vacuum, and obtained about the same results, which seem to show that from 5 to 15 per cent can be extracted by subsequent vacuum.

*Paper by C. D. Chanute, O. Chanute & Co., before the Wood Preservers' Ass'n. Chicago, Jan. 17.

De Luxe Sleeping Car, New York, New Haven & Hartford R. R.

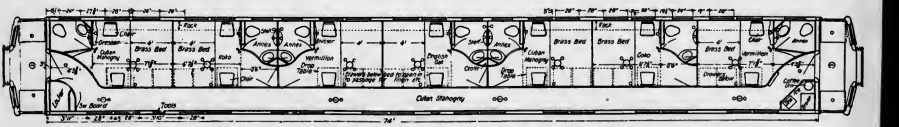
De Luxe Sleeping Cars on the New York, New Haven & Hartford R. R.

The New York, New Haven & Hartford some months ago established what is undoubtedly the most luxurious passenger traffic accommodations, exclusive of those afforded by private cars, to be found on any road in the country. The equipment for this service, which was built by the Pullman Company, consists of a corridor compartment car attached to each of the "Second Midnight" expresses, leaving New York and Boston simultaneously at 1:00 a. m. and composed of through sleeping cars for the above destinations only. The distinguishing feature of the compartment cars lies in the fact that there has been substituted for the usual upper and lower berths, full length brass beds, each four feet in width.

Each car, as the plan shows, contains seven compartments, each having an independent annex with toilet, wash stand, mirror and dresser shelf.

Interior of Compartment, DeLuxe Sleeping Cars, New York, New Haven & Hartford R. R.

In each compartment, besides the bed, there is a dresser, two chairs, a folding table, and an electric fan. Electric lights are conveniently disposed both on partitions and ceilings. Two pairs of compartments are inter-communicating, making possible their occupancy as suites as in the modern hotel and club buildings. The woods used in finishing are English oak, Cuban mahogany, vermilion and koko, producing very rich effects without overornamentation. By means of a thermostatic control apparatus, each passenger is enabled to regulate the heat in his compartment in accordance with his own desires, a matter of which probably more complaint is made by travelers in the usual type of sleeping car, than any other. The service is understood to have become quite popular with the discriminating patrons of this road, but is likely to remain unique for some time, since it is doubtful that there is another place in the country that would sustain such a service.



Floor Plan of DeLuxe Sleeping Cars, New York, New Haven & Hartford R. R.

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Office building, 50 by 80 ft. (one story and basement).

The arrangement of tracks is of great importance, and should be given careful consideration. Upon it depends, to a greater extent than is generally realized, the successful operation of the plant. The limits of this paper will not permit of a detail study of the track arrangement, and we will, therefore, simply call attention to the functions as follows:

First; the movement of locomotives to and from shop, involving the drawing of the fires and the separation of tender from engine; second, the movement of engines into erecting shop, or to storage tracks; third, the movement of tenders to boiler shop or to storage tracks; fourth, the movement of repaired engines to after-trial shop; fifth, the movement of repaired tenders to after-trial shop or to storage track; sixth, the trying of locomotives; seventh, the movement of material cars to and from the shop, and the placing of same for unloading; eighth, the necessary shifting of cars to various parts of the shop yard, and ninth, the movement of scrap from the various buildings to the scrap bins; the receipt and unloading of cars of scrap from outside points; and the loading and shipping of scrap which is sold. The track arrangement should be such as to allow of these various operations being carried on without interference and without undue loss of time.

What Percentage of Creosote Oil Can Be Withdrawn from Wood by Subsequent Vacuum?*

The writer thought that the best way to check the experiment made and discussed last year would be to make some experiments, more on the order of laboratory tests rather than on the commercial order; so the following set of experiments were evolved, and which are submitted without comment.

Some thoroughly dried ties were weighed carefully and then put in the cylinder, and the door tightly closed. The cylinder had a capacity of three ties, and on top of the cylinder at the highest end (as the cylinder was on a slight slant), there was connected a small pipe extending about a foot above the cylinder, so that when filling, the fact that the cylinder was absolutely filled could be ascertained, as the creosote was allowed to flow into the cylinder until it came out of this pipe in a solid, liquid stream, thus showing that there was no foam or air left in the cylinder, after which the valve just above the top of the cylinder was closed.

The cylinder was filled entirely by gravity, no vacuum being produced before filling, and the creosote was allowed to enter the cylinder very gradually so as to produce as little foam as possible. There was also a small pipe connected with the bottom of the cylinder at the lowest point, which was used to catch all drippings, as the cylinder was on a slight slant, as before mentioned.

After filling, a pressure of 100 lbs. per sq. in. was applied for three hours, and steam circulated in the steam coil, keeping the temperature at 180° F. The creosote was then withdrawn as completely as possible, and the ties immediately taken out and weighed, being set in tin troughs on the scales which would catch all drippings, and then allowed to stand in the air for one hour, still in the tin trough, after which the ties were reweighed, and the drippings in the troughs, and the drippings from the cylinder after the ties were removed were weighed, so as to check the drippings of the ties. In all cases this checked very closely. The ties were then returned to the cylinder and heated to the same temperature as before removal, and a vacuum of 25 ins. applied for one hour, and this vacuum was obtained in about three minutes, due to the small capacity of the cylinder.

After this vacuum, air was admitted to the cylinder, and the oil extracted was allowed to run through the small pipe under the cylinder, and was caught and weighed. The ties were removed from the cylinder and weighed, being again set in the tin troughs which had been cleaned of the former drippings. The drippings from the cylinder, and the drippings in the troughs, were weighed to check the weight of the ties after the vacuum, and the results stated in the accompanying tabulations were obtained. The writer performed some experiments along this line about 15 years ago, that is, the extraction by vacuum, and obtained about the same results, which seem to show that from 5 to 15 per cent can be extracted by subsequent vacuum.

*Paper by C. D. Chanute, O. Chanute & Co., before the Wood Preservers' Ass'n, Chicago, Jan. 17.

De Luxe Sleeping Car, New York, New Haven & Hartford R. R.

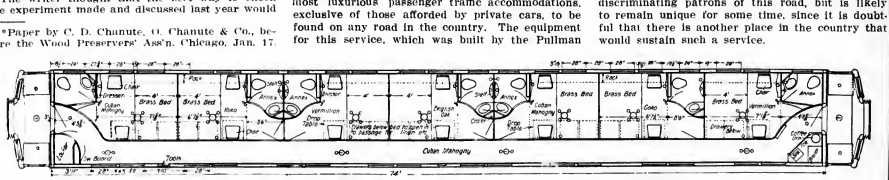
De Luxe Sleeping Cars on the New York, New Haven & Hartford R. R.

The New York, New Haven & Hartford some months ago established what is undoubtedly the most luxurious passenger traffic accommodations, exclusive of those afforded by private cars, to be found on any road in the country. The equipment for this service, which was built by the Pullman Company, consists of a corridor-compartment car attached to each of the "Second Midnight" expresses, leaving New York and Boston simultaneously at 1:00 a. m. and composed of through sleeping cars for the above destinations only. The distinguishing feature of the compartment cars lies in the fact that there has been substituted for the usual upper and lower berths, full length brass beds, each four feet in width.

Each car, as the plan shows, contains seven compartments, each having an independent annex with toilet, wash stand, mirror and dresser shelf.

Interior of Compartment, DeLuxe Sleeping Cars, New York, New Haven & Hartford R. R.

In each compartment, besides the bed, there is a dresser, two chairs, a folding table, and an electric fan. Electric lights are conveniently disposed both on partitions and ceilings. Two pairs of compartments are inter-communicating, making possible their occupancy as suites as in the modern hotel and club buildings. The woods used in finishing are English oak, Cuban mahogany, vermilion and koko, producing very rich effects without overornamentation. By means of a thermostatic control apparatus, each passenger is enabled to regulate the heat in his compartment in accordance with his own desires, a matter of which probably more complaint is made by travelers in the usual type of sleeping car, than any other. The service is understood to have become quite popular with the discriminating patrons of this road, but is likely to remain unique for some time, since it is doubtful that there is another place in the country that would sustain such a service.



Floor Plan of DeLuxe Sleeping Cars, New York, New Haven & Hartford R. R.

THE RAILWAY REVIEW.
CHICAGO. SAT. APRIL 22, 1911.

Pullman Company's First Report.

The Pullman Company has submitted its first report as a common carrier to the Interstate Commerce Commission. The law leaves to the discretion of the commission the designation of the corporations that shall be required to report, and not until this year was the Pullman Company placed in that category. The reason given by the commission is that a special form of report had to be prepared and that on account of press of work this was not accomplished until a few weeks ago. The company reports that for the year 1910 its income from the operation of 5283 cars, construction of cars and other sources was $33,334,073. It paid an 8 per cent dividend and distributed $20,000,000 in stock.

ELECTRIC RAILWAY JOURNAL
NEW YORK SATURDAY MAY 27. 1911

Pullman Company, Chicago, Ill., at a meeting of the board of directors on May 18, 1911, elected as chairman of the board Robert Todd Lincoln, who resigned as president the same day. John Sumner Runnells, vice-president and general manager of the company, was elected president. Charles S. Sweet, who has been assistant to Mr. Lincoln, was elected assistant to Mr. Runnells. Mr. Lincoln, who is retiring from active office on account of ill health, is sixty-eight years old. He was born Aug. 1, 1843, at Springfield, Ill. During the Civil War he served as captain on the staff of General Grant, and was admitted to the bar in 1867 at Chicago. From 1881 to 1885 he was Secretary of War in the cabinets of Presidents Garfield and Arthur, and from 1889 to 1893 was United States Minister to Great Britain. During the life of George M. Pullman, founder of the company, Mr. Lincoln was his special counsel, and on Mr. Pullman's death in 1897 he was made president. Mr. Runnells has been general counsel of the Pullman Company since 1887, and has been vice-president since 1905. He is also senior member of the law firm of Runnells, Burry & Johnstone, and is a director of the Merchants' Loan & Trust Company, the Pullman Trust & Savings Bank, and the Roseland Savings Bank. He was born in Effingham, N. H., July 30, 1844, and was graduated from Amherst College in 1865, and after studying law at Dover, N. H., removed to Iowa and became private secretary to the Governor of that State.

THE FINANCIAL AGE.
NEW YORK, SAT. MAY 20. 1911

Pullman Co.

ROBERT T. LINCOLN, at a recent meeting of the Board of Directors, presented his resignation as president, and was elected chairman of the board. John S. Runnells was elected president and Charles S. Sweet assistant to the president.

RAILWAY REVIEW - CHICAGO. SAT. JUNE 3. 1911.

—A recent statement published in the daily press regarding the Pullman Co. reads as follows: "There are at present employed at the Pullman works about 8,500 men, against 14,000 men at the high point of 1910. Working at full capacity the plants would employ 20,000, but this figure has never been reached, and normal operations require a much smaller pay roll. 'The decrease in employes is due to the slackening of the steel freight car business,' said Richmond Dean, manager of the company. 'At present we have no freight orders unfilled and the $1,000,000 plant erected a while ago for this branch of the business is closed down. The freight car capacity is around 100 cars a day and by pressure can be raised to 150 cars. I do not look for any new business in that department for some time. It depends on the prospects of big crops and the attendant car shortage. Under such conditions, which are not unlikely, our freight business will pick up rapidly. Our passenger car business is good, just about normal, and we will continue operations on the normal basis until August, when there will be a letting down there, too.' An official of the company says the building operations could stop entirely and earnings from the transportation department alone would about cover dividend requirements—8 per cent on $120,000,000 stock. It is also stated that the Pullman Co. is not feeling the decrease in passenger traffic as keenly as the railroads themselves."

RAILWAY AGE GAZETTE.
N.Y. - MAY. 26. 1911 - CHICAGO.

Robert T. Lincoln, president of the Pullman Company, Chicago, has resigned this position on account of poor health. At the meeting of the directors on May 18 Mr. Lincoln was made chairman of the board and John S. Runnells, vice-president and general counsel of the company, was made president. Charles F. Street was made assistant to the president. Mr. Runnells was born in Effingham, N. H., July 30, 1844. He graduated from Amherst College in 1865, and studied law at Dover, N. H. Before his connection with the Pullman Company he held the position of secretary to the governor of Iowa, and later was made United States district attorney for Iowa. In 1879 and 1880 he was a member of the Republican National Committee, and in 1880 was a delegate to the Republican National Convention. He has been general counsel for the Pullman Company since 1887, and vice-president and general counsel since 1905.

John S. Runnells.

TUESDAY. NY + ATLANTIC CITY.

too severe for the best standard chilled wheels, made from the approved car wheel mixtures, under the supervision of the most intelligent car wheel foundry practice, and the use of such chilled wheels was abandoned. After two years and two months 20 per cent. of the nickelized wheels have been withdrawn only on account of wearing out. No flanges gave way, and the service performed was in every respect equal to that of the steel wheel. There was no chrome in these wheels. Chrome adds greatly to mileage.

CAR VENTILATION.

BY THOMAS H. GARLAND.

It is only within the last decade that car builders and railway car men have turned their attention to the importance of having passenger cars properly ventilated. The necessity of having all classes of railway equipment properly ventilated is now fully recognized, particularly in closed moving vehicles where the space is limited. The public demand for proper ventilation is now so strong that public conveyances cannot be constructed with the ventilation feature omitted. Formerly the only ventilation to be obtained in passenger cars was through the deck windows, or the opening of doors and windows. This means of ventilation was sufficient during the warm season, but in cold weather could not be used without producing strong drafts and discomfort to the passengers.

While there has been many devices patented for the purpose of producing ventilation in railway cars there seems to have been but little progress made towards a practical plan until the Pullman Company took up the subject in a systematic manner, with a view of finding a satisfactory means for properly ventilating their cars. As evidence of the thoroughness with which that company has gone into the subject, Dr. Thos. R. Crowder, superintendent of sanitation, has devoted several years to the collection of data and making exhaustive tests on Pullman cars and those of the various railway lines. The information obtained during this extensive investigation of the subject was presented by Dr. Crowder before the American Public Health Association at the annual meeting in September, 1910. This report has been reprinted under the title of A Study of the Ventilation of Sleeping Cars, and is the most complete treatise on car ventilation that has been produced.

At different times the M. C. B. Association has appointed committees to take up the subject of car ventilation; in each case valuable data was obtained, and each report has brought out many of the requirements necessary for good ventilation. The practical ventilation of cars, however, is yet to be taken up by many of the lines. The change from wood to steel car construction makes it more necessary to give the subject of ventilation careful consideration; particularly is this true with cars of the elliptical type, where deck windows cannot be used.

With the advent of the steel car and the tendency to make the doors and windows as nearly air tight as possible, the necessity for a practical ventilating system is becoming imperative. While numerous reports on car ventilation have been made at different times, and the subject is one that is frequently discussed, there seems to be an absence of practical tests with the different ventilating devices and systems, except for those made by the Pullman Company.

There can be only one way to determine the merit or demerit of ventilating systems, and that is by putting them into service on a number of cars and having extensive tests made by men familiar with this class of work. The committee on ventilation appointed by the Association of Railway Electrical Engineers is now giving this subject careful study, and the conclusions reached by this committee will be of practical benefit to the roads who desire to take up the matter of car ventilation. There is probably no one feature of car construction on which there is such a variety of opinions as to the manner in which cars should be ventilated. Not only do officials, car men and trainmen hold different opinions, but the traveling public is always ready with suggestions how to properly ventilate the cars. Even among the medical fraternity there is a wide difference of opinion as to the part of the room or car at which the vitiated air should escape or be withdrawn and the fresh air admitted.

That passenger equipment must be provided with better means of ventilation than the standard deck sash, is now conceded by all of the railways. It becomes a matter of determining what is the most practical and efficient method to be used. Not only the first cost, but the cost of maintainance should be taken into account in investigating the various plans. It is usually thought that the ordinary deck sash is the least expensive means of ventilation; but a careful investigation may show that during the life of a passenger car so equipped, the expense for maintainance of deck lights, ratchets and screens is no small item. There are so many essential factors in the application of a practical system of ventilation, such as the relation to the heating system, the passing through tunnels, over deserts and through storms, avoiding drafts, excluding smoke, cinders, rain, etc., and the proper admission of fresh air, that the subject can only be dealt with by those who have given it long and careful study, or who are willing to do so.

HARPERS WEEKLY. May 6, 1911

May 6, 1911

...ve suppose, there will be put up somewhere a ...bronze effigy of MARK TWAIN, but not to keep him ...from being forgotten. He attended to that himself; and for that reason there is no particular hurry about the memorial.

The Pullman Porters

In a column of regrets about the existence and habits of the Pullman Company our neighbor the *Evening Post* devotes a considerable space to the evil case of the Pullman porters, who have no union to defend them, and cannot make any organized protest against their lot. The *Post* says that no matter how the cost of living may fluctuate, the company pays them no more than twenty-five dollars a month; when a train is late their hours of work are extended without extra pay; in bad times their tips may be less than in good times; if a passenger steals a towel the company deducts it from the porter's wages, and "on many runs the hours are long and exhausting, they can have but little sleep, and family life is out of the question."

It is a hardship to have family life suspended, and in this particular especially we sympathize with the porters. It need not be. If the company were less grasping, we are sure it could plan its cars a little differently and arrange so that the porters could have their families with them on the longer trips.

We suspect that the expense of paying for the towels the passengers steal may be made up to the porters by gratuities received from grateful passengers for the return of articles left in berths. For our part we do not recall having ever stolen a towel, but we have expressed to the porter in a modest pecuniary way gratification at recovery of tooth-brushes, bunches of keys, pocket-knives, watches, manuscripts, razors, overcoats, umbrellas, hand-bags, neckties, caps, flasks, nightcaps, pajamas, slippers, and many other articles of convenience or restoration.

As to the wages of the porters, no doubt consideration of that begins with discussion whether the porters ought to pay the company or the company the porters. We wonder if the porters as a group complain of their job! We wonder also if they will thank the *Post* for complaining for them. There must be more than five thousand of them—many more, perhaps—and all colored, so the Pullman Company is one of the more important employers of negro labor. Was it as the friend of the negro that the *Post* was speaking?

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RAILWAY REVIEW.
CHICAGO. SAT. AUG 26. 1911

roads named.

Question of More Fare for Riding in Sleeping and Parlor Cars.

It is announced officially that the proposition of exacting an additional charge for travel in sleeping and parlor cars, which was brought up for the consideration of traffic men last year, is to come before the general passenger and ticket agents at their annual convention in St. Paul next month. Among others, the suggestion is to be made that a quarter of a cent a mile be added to the regular price of a ticket for a passenger purchasing sleeping, observation or parlor car accomodations. In support of the suggestion, it is contended that the railroads are compelled to expend large amounts of money to meet the requirements of a certain class of patrons for fast train service, luxurious appointments, concerts, afternoon teas, and various other special kinds of service and attention. It is pointed out, also that three times as much space is allotted to one of that class of travelers as is given to those who use the ordinary coaches.

BOSTON EVENING TRANSCRIPT.
SATURDAY. SEP. 2. 1911.

IN A JAPANESE ING CAR

[From the Railway Age Gazette]

This night we had our first experiance in a Japanese car. The track is narrow gauge and the standard sleeping cars have six seats running lengthwise, each seating two passengers, with a centre aisle. The upper berth is the regular Pullman style and a section will accommodate two passengers. The night was during the extreme heat of midsummer, the car was crowded, and in addition to the regular curtains each berth was provided with a mosquito bar, which added to the general discomfort. Passengers were taken on and let down at all stops, so there was a constant procession through the aisle all night. Part of the car was reserved for local accommodation, and those who sat up smoked incessantly, so that long before morning the atmosphere became intolerable.

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Contrasting Pullman Construction.

In other columns of this issue of the Railway and Engineering Review we have mentioned a booklet recently published by the Pullman Company, Chicago, Ill., and we show two illustrations taken from this booklet. Fig. 1 shows the interior of one of the first sleeping cars built by this company. It is heated by wood-burning stoves, lighted by candles and has no carpet on the floor. The toilet facilities of the car are of the crudest type, not nearly as good as those found in up-to-date day coaches now built. It will be noted in this illustration that there is no stationary division separating the herths. The head lining used in the car is oil cloth. The herth is raised and lowered in a very crude manner and is partly hidden from view in its raised position by a fringe dropping from the ceiling in front of the berth.

In contrast with this car three views of the interior of a modern sleeping car are shown in Fig. 2. Here will be noted a part of the gentlemen's toilet and smoking room in the modern sleeping car equipment now being built by the Pullman Co. The right-hand illustration is a corner of the drawing room. The lower right-hand illustration is a general view of the car. This car is equipped with automatic ventilating and heating apparatus, lighted by electricity and has the latest improved sanitary arrangements. One of the present ideals of the sleeping car designer is to combine elegance and art with strength and efficiency to the end of personal comfort to passengers, and the illustration bears evidence of the results obtained.

CHICAGO SATURDAY JULY 15. 1911. REVIEW

THE RAILWAY AND ENGINEERING RE

Fig. 1.

Eighteen-Hour Train Derailed at Fort Wayne.

The Pennsylvania Special, the 18-hour Chicago to New York train which left Chicago at 2:45 Sunday afternoon, August 13, was derailed just west of Fort Wayne, Ind., and four employees were killed and four trainmen, 17 dining and Pullman employees, three mail clerks and 29 passengers, were injured. The train was running late and was being pulled by two engines; and was derailed while running at high speed over a sharp curve at the west end of the track elevation work under way in Fort Wayne. Both engines and four cars left the rails. The engine of a freight train standing on an adjoining track was struck by the two passenger engines and all three were wrecked. The injuries were confined to trainmen and passengers in the forward coaches. The train was made up wholly of steel cars, and to this fact may be attributed the escape of the passengers from fatal injuries.

The Chicago *Record-Herald* gives the following details:

Charles P. Skillman, who resides directly opposite the [illegible] where the wreck occurred, saw the whole thing as he sat on his veranda. "The passenger train," said Mr. Skillman, "was coming at a terrific rate of speed. Just across the bridge which spans the St. Mary's river it veered into a new switch placed there because of track elevation work. I think the train was going at too great a rate for the switch to stand, for as I watched it seemed to me that the rails of the switch slid from under the passenger directly over to the freight train standing on the north track. . . ." From Valparaiso to Winona Lake the engine which brought the train out of Chicago was working badly, so the engine which was to take the train from Fort Wayne to Crestline was sent to Winona Lake to meet the flyer. . . . Robert Russell of Toronto and Fred Beckwith of New York, passengers, were imprisoned in the vestibule between the diner and the car immediately to the rear, and were unable to escape from their narrow prison. Their cries attracted rescuers who cut away the roof of the car and saved them.

"After the crash," said George Mitchell, of Los Angeles, "there was a panic such as I never supposed could happen. I saw strong men seize a woman whose companion had broken a window and was pushing her through it, pull her back and crawl out themselves. Several men in a panic of fear rushed over me and my family, and as a matter of fact, we were the last to get out of the car. My daughter, aged 14, has a bad cut on her leg, but the rest of us escaped with only bruises and slight cuts. If it had not been that the cars were of steel I think that we should all have been killed."

This train was derailed at Indiana Harbor, 128 miles west of Fort Wayne, one week previously.

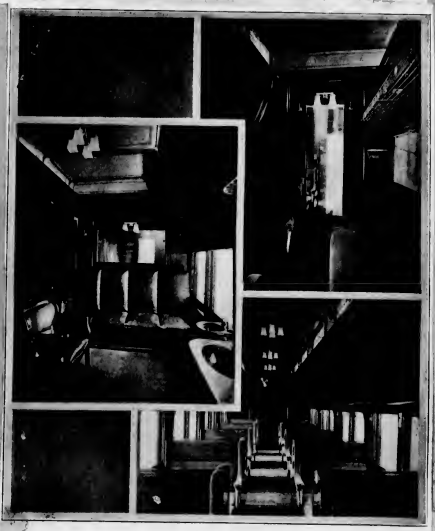

Fig. 2.

CHICAGO
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REVIEW
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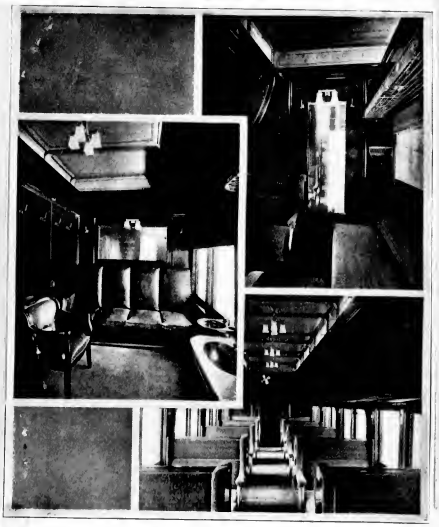

Fig. 2.

FRIDAY. AUG. 25. 1911.

the United States from the encroachments of foreign railways or steamship lines.

If, then, the United States Steel Corporation and some other industrial c ncerns control even 50 per cent. of the business in their r ective lines, they are nearer monopolies than any railway combination of railways, for, clearly, no railway or combi tion of railways controls anything like 50 per cent. of the transportation business or could exert as much influence on rates as these industrial concerns can on prices, even if there were no regulation of rates at all. True, the railways, as a whole, might combine to raise rates, as many have in the past; but such general advances usually have not got cold before individual lines have begun rapidly making reductions here and there, with the result that in a short time most or all of the advances have been frittered away.

However, as the *Railway Age Gazette* said in the editorial which the *Springfield Republican* criticizes, it does not necessarily follow, because the business of certain large industrial corporations is "clothed with a public interest," that they should be subjected to the same kind of regulation as the railways. The kind of regulation that has been adopted for the carriers has not yet proved itself a success even as applied to them; and until it has passed the experimental stage in the railway field, it would be very unwise to extend it to others.

CAR VENTILATION

LAST winter the traveling public must have noticed a marked improvement in the ventilation of cars, especially sleepers and those provided for first-class travel. This was largely the result of the application of exhaust ventilators and the better regulation of temperature. The best general account of the state of the art of heating and ventilating passenger cars is found in a report on the subject in the proceedings of the Master Car Builders' Association for 1908. This report covers 32 pages and describes the principal systems in use at that time, but it contains little as to the relation of the quality of the air to health and comfort, beyond a quotation from the description of the Pennsylvania system of car ventilation, as developed for coaches by Dr. C. B. Dudley. The pamphlet containing this description covers 24 pages, and was published in 1904. Since that time an extensive and valuable investigation of the subject of ventilation of sleeping cars has been conducted by Dr. Thomas M. Crowder of Chicago, and the results of his work are contained in a paper presented at the annual meeting of the American Public Health Association, Milwaukee, Wis., September, 1910. This paper covers 51 pages, and is illustrated with numerous tables and diagrams. An abstract of it will be found in this issue.

The paper comprises the most complete investigation of the quality of the air in passenger cars that has ever been made, and it discusses in a most intelligent manner the requirements for good ventilation. It reaches conclusions as to the relation of the temperature of the air to its content of carbonic acid and moisture which are new, and have a direct bearing on the amount of air required for the maintenance of healthful conditions in sleeping cars.

The normal proportion of CO_2 in pure air is commonly stated as 4 parts in 10,000, and the proportions given here for various conditions will use this method of rating. The average CO_2 found in sleeping cars carrying 15 passengers and ventilated in the ordinary manner by deck sash was 7 parts in the body of the car at the breathing zone. With the deck sash open one-fourth, the CO_2 in the lower berths averaged 8.43, and in the upper berths 8.85 parts. The tests made in cars equipped with the exhaust ventilators connected to the deck sash and now generally used by the Pullman Company, gave an average CO_2 of 6.33 parts for the lower berths, and 5.95 parts for the upper berths. Where berths were occupied by two persons the average results from 35 determinations from seven cars equipped with exhaust ventilators gave 9.9 parts CO_2 in 10,000. The average hourly air supply to the berths of cars without exhaust ventilators was 1,300 cu. ft. per person, while that supplied with exhaust ventilators averaged 1,900 cu. ft. The experiments have also demonstrated that the berth is not similar to a closed compartment, but is subject to the effects of air supply and air currents through and around the curtain. Forty-three observations made in day coaches with 32 passengers gave an average of 9.38 parts C O_2.

With the car standing still the exhaust ventilators are not effective, and it was found that the contamination reached 15 parts C O_2 in cars at stations awaiting very late departures, and in a few instances it was as high as 20 parts. This should call for supplemental ventilation in the way of electric fans, not to circulate the foul air in the usual way, but arranged to either supply fresh air directly or exhaust the bad air. Open sash and open doors assist materially in this respect if the weather is not too cold. With cars in motion, it has been demonstrated that the exhaust ventilators cause an average of 40,000 cu. ft. of air per hour to enter the breathing zone of sleeping cars, and this is sufficient to afford a fair degree of ventilation for 40 persons, as it changes the air in the car ten times per hour. As the sleepers do not average 20 passengers per car, the supply is double that ordinarily supplied to well ventilated coaches.

While this investigation and most treatises on ventilation have to deal principally with the content of carbonic acid in the atmosphere, it has been demonstrated that this gas is not alone responsible for the discomfort of bad ventilation, and the closing portions of Dr. Crowder's paper deal with this interesting and important phase of the subject. A very badly ventilated room may contain 50 parts C O_2 in 10,000, but this of itself cannot have any harmful influence or toxic effect producing distressing symptoms. It is rather the exhaustion of oxygen, increase in temperature, and the larger proportion of aqueous vapor which cause discomfort. The lack of oxygen causes lassitude, and excessive temperature and vapor prevent the usual dissipation of body heat to the surrounding air. Carbonic acid, while not directly responsible for these conditions, is associated with their production, and the degree of bad ventilation generally is taken as proportional to the percentage of C O_2. The principal point is that if the temperature of the air is kept low, a larger percentage of C O_2 can be permitted in the air without discomfort. With a temperature of 64 deg. Fahr., C O_2 as high as 15 to 18 parts will not ordinarily produce discomfort. Heat stagnation is generally the cause of discomfort in cars as well as in houses, and this is the result of the physical condition of the atmosphere, quite independent of the degree of respiratory contamination or of any change in its chemical composition. The problem of properly ventilating a railway car is, therefore, chiefly a question of how to regulate its temperature. Where cars are close and stuffy the temperature is invariably high, and odors are then more noticeable.

The overheating of cars is the paramount evil to be guarded against in the attempt to maintain comfort and good hygiene. In sleeping cars it is necessary to have twice as large a proportion of radiating surface as is usually required for heating residences, as the number of persons occupying a given space is much larger and the air must be changed more frequently. A system is therefore needed for cars which is capable of being quickly controlled to meet rapidly changing conditions. Such a system, with multiple units of radiating surface, each with a separate control, is now being used experimentally. It is encouraging and a great satisfaction to find that conditions in sleeping cars are tending toward an ample supply of fresh air at a uniform temperature of about 60 deg., and this is almost equal to that in a comfortable bedroom in a residence.

This much accomplished, attention should be directed to the ventilation of coaches, where conditions are even more difficult, on account of the more crowded space, and where the great majority of railway passengers are still suffering from overheating of the cars and bad ventilation generally.

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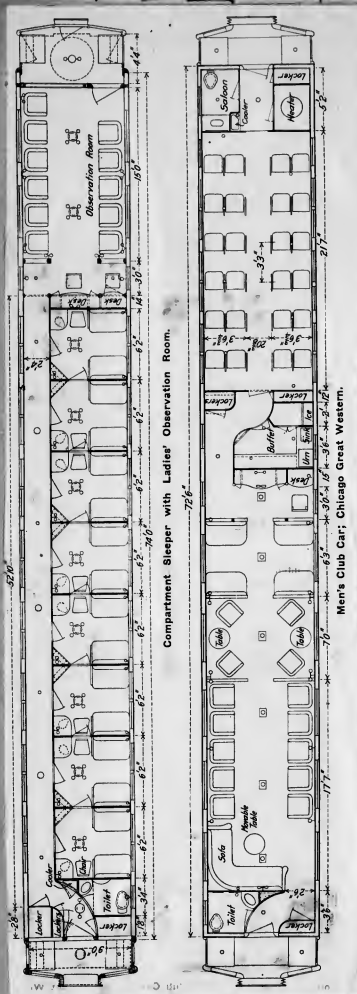


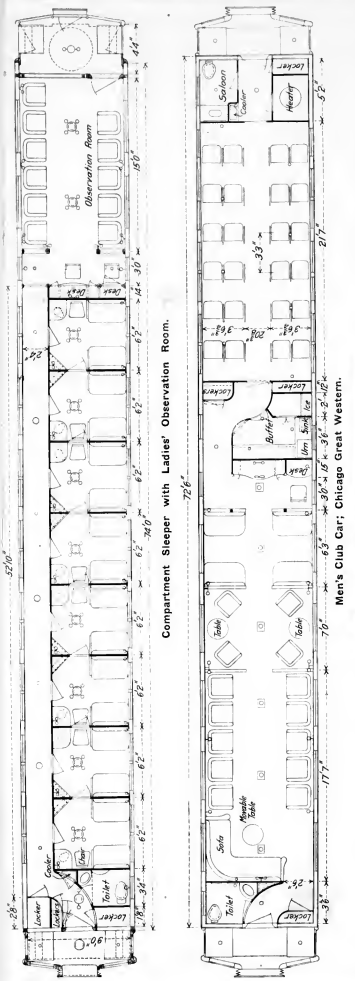
table are provided at one end, and at the other end, as shown in one of the illustrations, is placed a large window looking out on the observation platform. This platform is 4 ft. 4 in. deep, which allows ample room for two or three chairs. The interior of the car is furnished in Mexican mahogany with the twentieth century style of decoration. The front part of the car is divided into eight sleeping compartments, each being provided with an electric fan, a chair, wash bowl and closet. A dressing room is provided at the extreme end, which is finished with tiled rubber flooring and wainscoating. The car is 74 ft. long over the end sills, and weighs about 130,650 lbs. It is provided with the latest improvements to meet the special requirements of women passengers.

The men's club car, another interesting feature, is arranged with a buffet at the center, a reclining chair compartment at one end, and a smoking room at the other. The interior view shows the club room furnished with chairs, tables and a lounge at the end. It is divided into three sections; the end one is arranged for a general lounging room, the middle has a table and two chairs on each side, and the inside section has two side seats on each side. The interior finish is of oak, and the chairs are upholstered in dark red Spanish leather. The car is provided with a saloon at each end, and is arranged to provide exceptional comfort to the traveler. The length of the

Toilet Room in Sleeper.

car is 72 ft. over end sills, and weighs 146,500 lbs., each truck weighing about 21,950 lbs. The two other views show the interior of the new sleepers, which contain 16 berth sections and two toilet rooms. These cars are 74 ft. long and weigh 127,000 lbs., the trucks weighing 20,450 lbs. each. The cars all have steel underframes with center sills 26 in. deep at the center; the six-wheel trucks have cast steel frames.

The Norwegian State Railways have prepared a scheme for the construction of railways over a number of years, which it was hoped could have been based upon an annual expenditure of about $1,600,000, as far as the exchequer was concerned, in addition to a smaller vote on the ordinary budget. It has been found expedient, however, not to exceed $1,450,000 a year, which sum will be somewhat increased by local grants. The plan provides for the completion of the following lines: Otta-Dombaas, to be opened 1912; Aamli-Tveitsund, 1913; the Dovre Railway, 1916; Kongsberg-Gvarv-Notodden, 1918; Myrdal-Fretheim, 1919; Gvarv-Kragero, 1922; and Sunan-Grong, 1922. This entails an aggregate expenditure of $16,000,000. This expenditure includes for rolling stock about $800,000 for the Dovre Railway; $420,000 for the Vestland Railway; $270,000 for the Rouma Railway; and about $210,000 for other lines.



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RAILWAY AGE GAZETTE
NY. CHICAGO. FRIDAY. NOV. 17. 1911.

At the annual meeting of the stockholders of the Pullman Company, Chicago, John S. Runnels in his presidential statement said that during the fiscal year, ended July 31, there had been an increase of 9 per cent. in the number of passengers using Pullman accommodations and an increase of 7 per cent. in the number of miles run. The total payroll of the company is $9,663,997. The business of the company is dull at present and only 6,400 men are employed.

The Pennsylvania Railroad is to run on November 20 to 25, a farmers' special through the Delaware-Maryland-Virginia peninsula, and, on November 27 and 28, a similar train over the Pope's creek branch, in central Maryland. The peninsula farmers' special will make about 50 stops during the six day [illegible] well defined center will be visited. The Pope's creek

Maximilian M. Schneider for the past 11 years chief designer of the Pullman Company, Chicago, died at his residence in that city on November 12. Mr. Schneider was born in Tolz, Bavaria, April 1, 1857. His father was chief forester of Bavaria for a number of years, and his mother was a relative of the eminent French chemist, Lavoisier. Mr. Schneider graduated from the University of Munich, where he received his engineering education, and later studied three years in scientific schools in Paris. He served with distinction in the Franco-Prussian war and was decorated with the iron cross by King William for his bravery at the battle of Gravelotte. For a number of years before going to the Pullman Company he was employed in Chicago by the Crane Company as constructing engineer. In recent years he has been the chief designer of the Pullman Company and was responsible for important improvements in Pullman cars. In addition to his unusual attainment as an engineer, Mr. Schneider displayed considerable ability as an artist and sculptor. His most notable work was the design of steel sleeping cars. He was able not only to make the plans for the underframe, but also the designs for the inside finish, whether of woodwork or of metal, the lamps, the metal trimmings and also the color scheme for the decoration. Perhaps his most exhaustive work in car design was the finish for the entire Pullman train exhibited at the Trans-Mississippi Exposition held in St. Louis, Mo., in 1904.

M. M. Schneider.

* * *

[illegible] Company, Boston, Mass., has

Not so many years ago George M. Pullman bought an ordinary day coach of the Chicago & Alton Railroad Company, transformed it into an experimental sleeping car, and operated it nightly between Chicago and St. Louis. Later he became more ambitious and organized the Pullman Sleeping Car Company, which, as the whole world knows, rapidly grew in importance until it acquired the privilege of operating its magnificent cars on the entire railway mileage of the country.

Now the Pullman Company has a capitalization of $120,000,000, owns nearly 6,000 cars, worth $91,000,000; and earns $39,000,000 a year exclusive of the other and unrecorded millions paid by the submissive traveling public to its porters and other employes. It is within the memory of a good many railway men yet on earth, when the only light in Pullman cars was supplied by two tallow candles at each end; when the sleeping berths provided were little if any better than those in canal boats; and when A. B. Pullman, who was a brother of George M., and later a vice-president of the Pullman Company, was one of its favorite conductors.

The early days of the sleeping car were not altogether lovely There were many who could not be induced to risk life in the new and strange "contrivances," and many more who hesitated to incur the extra expense involved, notwithstanding that they had ample means. Then there were patent-right suits to be fought or "settled," and competitors to divide with or buy off. A Mr. Field for several years persistently disputed Mr. Pullman's claim to priority. Then came the Woodruff Company and considerably later the Wagner or New York Central Sleeping Car Company. All these had to be reckoned with and gotten rid of before the Pullman could become an absolute monopoly. And it cost a good round sum of money.

The Railway Age Gazette Nov. 1911

RAILWAY REVIEW.
CHICAGO, SAT. JULY 30, 1910.

Pullman Rates Attacked in Kansas.

An attack has been made today before the Interstate Commerce Commission by the railroad commission of Kansas upon the rates charged by the Pullman Company for upper berths in sleeping cars. The complaint was directed against the Pullman Company and several railroads operating in Kansas. The allegation is made that the charges for upper berths are unreasonable and excessive as compared with the charges for lower berths. The assertion is made that the rates for upper berths ought not to exceed one-half the charges for lower berths, and the commission is requested to fix a rate of fare for lower berths on that basis.

THE ODESSA WRECK.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Referring to the sentence "Although the car had wooden inside finish which was badly splintered, no fire occurred; and this must be attributed to the use of steam heating and electric lighting, which do not require live flame in the light or live coal in the heater as in the old style methods," in the article "The Steel Passenger Cars in the Odessa Wreck on the St. Paul," which was published on page 85 of your issue of January 19:

I have read everything that I have seen, or that has been brought to my notice, on the subject of fires in railway wrecks; but I have yet to learn of one instance wherein the "old style" method, Pintsch gas, has been responsible for, or contributed toward, conflagration in railway accidents.

MECHANICAL ENGINEER.

[The exceptions of "Mechanical Engineer" are well taken. The comments of the *Railway Age Gazette* were such as to produce an impression that was not intended. The fact is that the reference to "live flame in the light or live coal in the heater as in the old style methods," was meant to apply only to stoves and to oil lights, as, indeed, it was thought would be clear from the use of the qualifying words "old style methods." There are safe methods of lighting besides electric lighting; and those methods cannot be included under the description "old style," for they are in widespread use at the present time. As a matter of fact, the cars in the wreck on the St. Paul were equipped with both Pintsch gas and electric light.—EDITOR.]

RAILWAY AGE GAZETTE
NY. CHICAGO. FRIDAY. DEC. 1. 1911.

STATE COMMISSIONS.

The California State Railway Commission has ordered the reduction of the rates for berths in sleeping cars between San Francisco and Los Angeles to a uniform price, $1.25. The order is to take effect December 15. Under the existing tariff the rate for one passenger is $1.50; for two passengers $2.50; for three passengers $4, and for four passengers $4.50.

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Why is it that when a certain specialty is found to be an expensive outlay, its continuance is sanctioned? Why is it that flagrant and barefaced "pull" is allowed to take the justly due dividend from the stockholder? How can some, under meager salaries, who have the "say," retire, under fire, rich?. The above questions may be answered thus: The little toad in the puddle follows the lead of the larger ones. If he gets too inquisitive the larger one simply swallows up the little one, and the unthinking stockholder and easy public pay the bills.

The handwriting of publicity is already on the wall. The wrecks are already strewn along the shore, and through the columns of your excellent journal, the lime light of investigation will throw consternation among the gang, and after the storm has blown over, the little fellow can sell his products in competition with the larger, and the "pull" will not be an eyesore to the honest business man. Repair costs will be brought down to a minimum and the stockholder will receive his justly due dividends. The salesman will not besmirch his reputation, high, important positions will not be used for petty gain, and expense accounts will not be padded to cover gifts because we happen to love our dear brother who has the "say."

RAILWAY SUPPLY MAN.

CHICAGO, December 9, 1911.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The editorial in your issue of December 1 regarding the wholesale distribution of Christmas gifts by representatives of railway supply houses is most timely. The practice has grown to proportions where it has become an abuse. There is no good and valid excuse for its existence, and its abolition should be earnestly desired by all right-thinking men.

The spirit of the Christmas festival, which forms the excuse for this promiscuous giving by those who sell to those who buy, is commercialized and cheapened by the practice. No thought of the fundamental idea underlying the observance of the Christmas holiday enters into the transaction. The finer character of both the men who give and those who receive is lowered, and the keenness of their moral perceptions is dulled and blunted in the process. If the expression of a kindly thought or a grateful remembrance was the underlying motive, a simple Christmas card would serve better to convey it than the most elaborate and costly gift, with its burden of unearned obligation.

The situation of the recipient is in most cases more difficult than that of the donor. No one likes to be accused of "leaning over backwards" in his uprightness, or of ostentatiously attempting to occupy a higher moral plane than his neighbor; nor does any man wish to be considered discourteous to his fellows, and the refusal or return of a proffered gift is often regarded as the height of discourtesy.

The arguments advanced when any disinclination is shown on the part of the recipient to be a party to the transaction are always insidious and frequently end by his scruples, if he has any, being overcome, and his conscience quieted by a plausible presentation of alleged counter-obligation. This usually takes the form of recognition of courtesy extended to the giver through the past year; as if ordinary business courtesy were so scarce as to require special recognition, or be made the subject of barter.

The enormous extent to which the practice has grown would lead to the inference that railway officials of high or low degree were the most courteous set of men on earth, a fact which would hardly be borne out could some of the private conversations among supply men be introduced in evidence. Altogether, the practice as a whole is debasing, if not immoral, and its prevalence is greatly to be deplored. I express my earnest conviction when I say that it should be abolished, not only for the good of the railways, but of the individuals, and in the interest of a higher business morality, and I hope that the fearless attitude of the *Railway Age Gazette* in bringing this question so forcibly and openly to the attention of all those immediately concerned will correct the evil which has been so vividly pointed out.

EX-PURCHASING AGENT.

THE SANTA FE TRAIN DE LUXE.

The Santa Fe was the first railway to place in service a limited train from Chicago to southern California, and after 16 years of successful operation of such trains it has determined to inaugurate an extra-fare service once a week, taking only 63 hours between Chicago and Los Angeles. This train, which is named

Buffet Car; Santa Fe Train de Luxe.

the "Santa Fe de Luxe," commenced its first run on December 12, 1911, being scheduled to leave Chicago at 8 p. m. Tuesday, Kansas City at 8 a. m. Wednesday, and to arrive at Los Angeles at 9 a. m. Friday. On the return trip it leaves Los Angeles at 6 p. m. Tuesday and arrives in Chicago at 11:10 a. m. Friday. This is faster by 5½ hrs. westbound, and by 8 hrs. eastbound, than the next fastest train on any line between these points. The distance by the way of the Santa Fe is 2,267 miles.

The "Santa Fe de Luxe" is limited to six through cars, one observation Pullman, one compartment Pullman, two all-drawing-room Pullmans, one club car and one dining car. In addition to the cost of regular first-class railway and sleeper tickets, an extra

Dining Car; Santa Fe Train de Luxe.

Volume 30 Insert p100a

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Volume 20 insert p1207a

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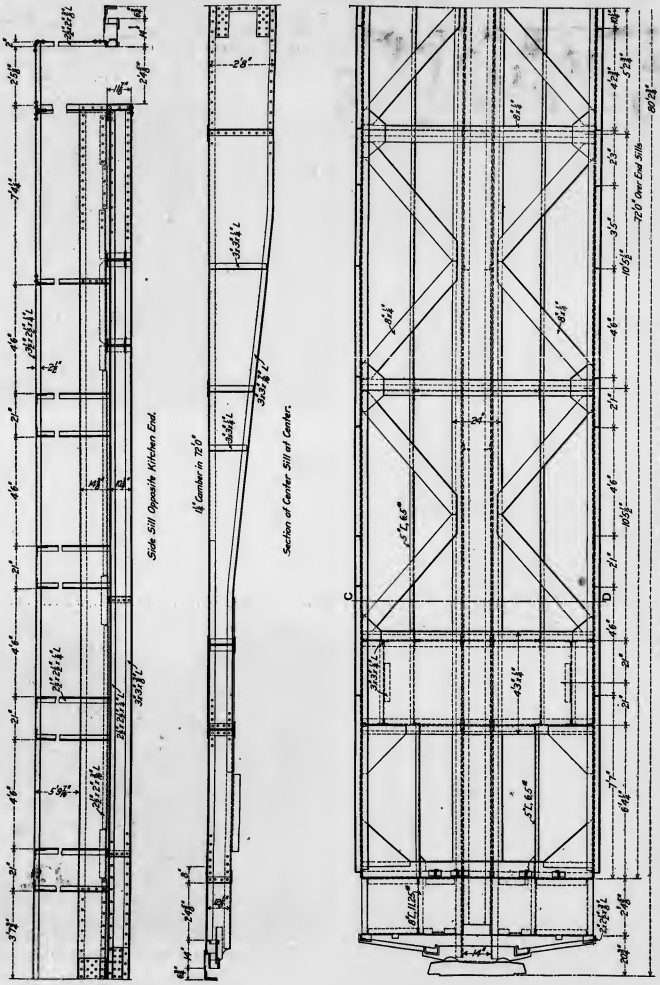

Steel Underframe of Dining Car; Santa Fe Train de Luxe.

Volume 30 Insert p100b

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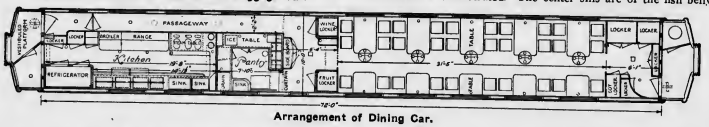
Barber's Room in the Buffet and Baggage Car.

seven rooms, which have two double berths and a sofa berth. Individual annex lavatories and toilets are provided as well as electric berth lights. Six of the drawing-rooms may be occupied en suite. These cars are built from the recent Pullman designs using its type of steel underframe and cellular steel siding; the inside finish is mahogany.

The club car has a commodious smoking and reading room for men, with a fully stocked buffet. Bulletins by wire, giving the day's stock market report and important news items are received here. There are also the usual conveniences of the club car, including a writing desk, magazines, barber shop and tub bath room with shower. The front part of this car for a length of 29 ft. is used for baggage.

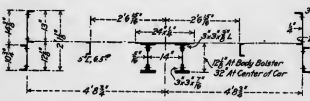
The dining car is built from special plans, which include a recently invented air-cooling and air-washing device that perfectly ventilates the car. The indirect system of electric lighting is used for general illumination, and the center lamps are enclosed in handsome metal pendants which contain the reflectors. The table lamps have ornamental shades and are below the level of the eye. The interior finish is vermilion mahogany. The dining car underframe and superstructure was designed by the engineer of car construction of the Santa Fe and the inside finish by the Pullman Company. It is 72 ft long over the end sills and weighs 144,000 lbs. The cross section and longitudinal plan of the steel underframe are illustrated. The center sills are of the fish belly



Arrangement of Dining Car.

Buffet and Baggage Car of the Santa Fe Train de Luxe.

fare of $25 is charged in each direction between Chicago and Los Angeles. The observation Pullman contains ten sections forward and an observation parlor with a large protected rear platform. Each section has two double berths with electric sidelights. The rear half is a spacious observation parlor sumptuously furnished. It contains easy chairs, a writing desk, stationery, a library of the latest fiction, newspapers, illustrated weeklies and magazines, a mail box, etc.



Section Through Steel Underframe of Dining Car Near the Bolster.

The compartment Pullmans contain seven compartments and two drawing-rooms, each compartment having two wide double berths, individual lavatory and toilet. Baggage racks, electric lights and electric curling iron heaters are among the conveniences. Doors lead to adjacent rooms, which rooms may be occupied en suite if desired. The drawing-room Pullmans each have

Buffet Car; Santa Fe Train de Luxe.

Volume 30 Insert p100c C

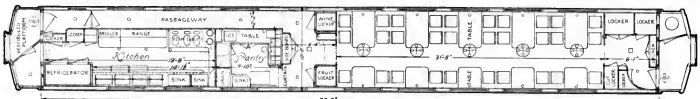
100

Barber's Room in the Buffet and Baggage Car.

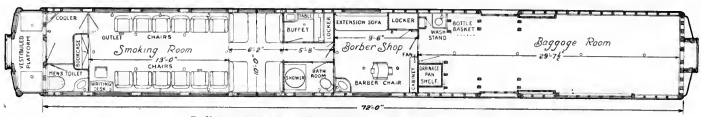
seven rooms, which have two double berths and a sofa berth. Individual annex lavatories and toilets are provided as well as electric berth lights. Six of the drawing-rooms may be occupied en suite. These cars are built from the recent Pullman designs using its type of steel underframe and cellular steel siding; the inside finish is mahogany.

The club car has a commodious smoking and reading room for men, with a fully stocked buffet. Bulletins by wire, giving the day's stock market report and important news items are received here. There are also the usual conveniences of the club car, including a writing desk, magazines, barber shop and tub bath room with shower. The front part of this car for a length of 29 ft. is used for baggage.

The dining car is built from special plans, which include a recently invented air-cooling and air-washing device that perfectly ventilates the car. The indirect system of electric lighting is used for general illumination, and the center lamps are enclosed in handsome metal pendants which contain the reflectors. The table lamps have ornamental shades and are below the level of the eye. The interior finish is vermilion mahogany. The dining car underframe and superstructure was designed by the engineer of car construction of the Santa Fe and the inside finish by the Pullman Company. It is 72 ft long over the end sills and weighs 144,000 lbs. The cross section and longitudinal plan of the steel underframe are illustrated. The center sills are of the fish belly

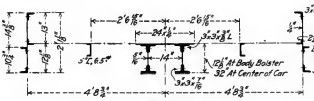


Arrangement of Dining Car.



Buffet and Baggage Car of the Santa Fe Train de Luxe.

fare of $25 is charged in each direction between Chicago and Los Angeles. The observation Pullman contains ten sections forward and an observation parlor with a large protected rear platform. Each section has two double berths with electric sidelights. The rear half is a spacious observation parlor sumptuously furnished. It contains easy chairs, a writing desk, stationery, a library of the latest fiction, newspapers, illustrated weeklies and magazines, a mail box, etc.



Section Through Steel Underframe of Dining Car Near the Bolster.

The compartment Pullmans contain seven compartments and two drawing-rooms, each compartment having two wide double berths, individual lavatory and toilet. Baggage racks, electric lights and electric curling iron heaters are among the conveniences. Doors lead to adjacent rooms, which rooms may be occupied en suite if desired. The drawing-room Pullmans each have

Buffet Car; Santa Fe Train de Luxe.

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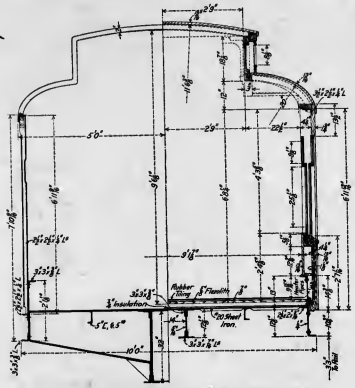
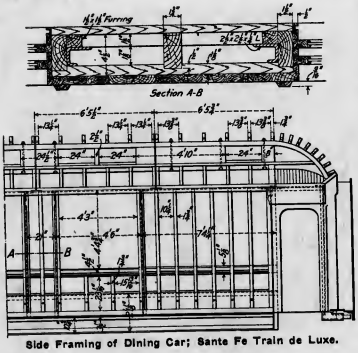
type with webs 5/16 in. thick. and 32 in. deep at center and 12⅞ deep at the body bolster. The top cover plate is ¼ in. x 24 in. The side sills have webs ¼ in. thick and are 25⅛ in. deep; 10¾ in. of this extends below the siding, and is stiffened with angles on the outside as shown in the cross section of the car. The longitudinal floor bearers are 5 in., 6.5 in., channels. The floor is covered with No. 20 sheet iron; on top of this is ¾ in. of insulation, ⅞ in. flooring boards, ⅝ in. flexolith, and a wearing sur-



Cross Section of Steel Underframe Dining Car.

face of rubber tiling. In the woden superstructure 2½ in. x 2½ in. x ¼ in. special angles are placed next the window posts, and these are riveted to the side sills and to the 2½ in. x 3½ in. x ¼ in. angle iron plate. In the end construction 4 in. steel channels are bolted to each wooden post; the corner posts are reinforced with angle irons, and the whole outside end surface is covered with steel plate ⅛ in. thick.



Side Framing of Dining Car; Sante Fe Train de Luxe.

REPORT OF THE HADLEY SECURITIES COMMISSION.

The securities commission appointed by President Taft to investigate the question of Federal regulation of the issuance of securities by railway companies, has made its report to the president, who has submitted it to Congress with his approval.

The specific recommendations for positive action that the commission makes are as follows:

That a railway doing interstate business should be required to furnish the Interstate Commerce Commission, at the time of the issue of bonds or stock, with a full statement of details of the issue, the amount of the proceeds, to whom they go, and later to furnish a full accounting of such proceeds.

That every company be required to send the Interstate Commerce Commission at certain specified times a full statement including the names of the parties concerned, of all financial transactions that have taken place during the periods covered by the report, whether in cash, in securities or in other valuable considerations. This statement is also to include the disposition of surplus.

That whenever a railway buys new property, every means should be placed at the disposal of the Interstate Commerce Commission to ascertain the value of the property as accurately as possible, a fundamental, though not necessarily controlling element in value being cost of reproduction.

That the Interstate Commerce Commission be given broad powers and adequate means for the valuation of the physical property of railways are as one element in determining fair value.

That if stock has a par value, it must represent that amount actually paid in, but that if it purports only to be a participation certificate giving a proportionate interest in any profits that may be earned, it must be understood that this is its essential character, and that if it claim any further rights than this, it must prove them by specific evidence.

That the intercorporate holding of railway stocks and the issue of collateral trust bonds against stocks should be discouraged but not forbidden.

That the two ways by which federal and state regulation may be prevented from interfering with each other are a full interchange of views between the Interstate Commerce Commission and the commissions of the several states as a means of securing harmony, or, second, of a federal incorporation act which shall permit railways to exchange their state charts for federal ones, and that such an act could be drawn in such a way as to offer advantages in the conduct of interstate traffic without unduly conflicting with local interests; that whichever alternative of these two is adopted, any disturbance but a voluntary of the existing amounts or status of bonds or stocks validly issued is clearly inadmissible, and in general there should be as little disturbance as possible in the relations today existing between different classes of security holders.

That no restrictions excepting those of publicity should be placed on the powers of the directors to issue new stock pro rata to their stockholders at or above par, even though the price received be less than the existing market value of the old stock.

That if a document says $100 has been paid, $100 ought to be paid. The most that can properly be done is to allow companies which cannot sell stock at par to arrange for the "amortization" or gradual cancellation of any net discount by appropriating out of future income or surplus which may accrue subsequent to the issue of such stock, an annual sum having precedence over dividend payment to be applied on capital account as to make the deficiency good in a period of no very great length.

That the retention of the $100 mark, or any other dollar mark, on the face of the share of stock is not essentially important, and that companies should be encouraged to incorporate with stock having no par value, and that existing companies be encouraged to exchange their stock into shares without a par value.

That as between the two alternatives of permitting the issue of stock below par, or authorizing the creation of shares without par value, the latter seems to the commission the preferable one.

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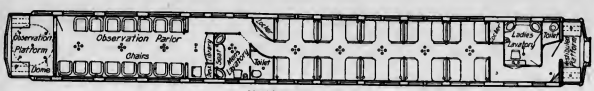
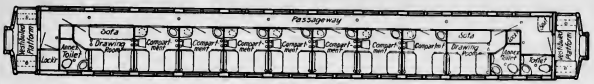
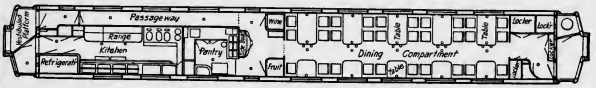
CHICAGO. SATURDAY.







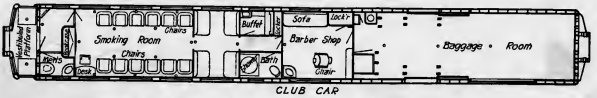


Diagram of Cars Comprising the "Santa Fe de Luxe."

The passenger department of the Atchison, Topeka & Santa Fe has issued an artistic 24-page brochure giving full particulars as to schedules, accommodations, rates, etc., pertaining to the new train, the "Santa Fe de Luxe," placed in service on Dec. 12 for weekly trips from Chicago to California points and vice versa. This is probably the most elaborate long distance train ever placed on a regular schedule, and for the class of patrons to which it is meant to appeal, it should prove a convenience of the highest order.

The "Santa Fe de-Luxe."

Some sixteen years ago the Atchison, Topeka & Santa Fe Ry. placed in service the first limited train ever run to southern California. Although that train is still in daily operation and is reserved exclusively for first-class travel, during the rush season in midwinter it affords insufficient accommodations for the volume of high-class traffic which seeks this route to the West.

To meet this requirement, the road on December 12 put on an extra-fare train, the "Santa Fe de-Luxe," to run once a week, during the winter and early spring, between Chicago and Los Angeles, via Kansas City and Albuquerque. Westbound, the train leaves Chicago at 8 p. m. every Tuesday, and arrives Los Angeles at 9 a. m. on Friday. Eastbound, it leaves Los Angeles at 6 p. m. every Tuesday, and arrives at Chicago at 11:10 a. m. on the following Friday. The running time of sixty-three hours between Chicago and Los Angeles involves a saving of five and one-half hours westbound and eight hours eastbound, marking a notable advance in transcontinental service.

The train is limited to six through cars, consisting of one observation Pullman, one compartment Pullman, two drawing-room Pullmans, one dining car and one club car. The observation Pullman contains ten sections forward, and an observation parlor with large protected rear platform. Each section has two double berths with electric sidelights. The rear half is a spacious observation parlor, sumptuously furnished, and containing easy chairs, a writing desk, stationery, a library of the latest fiction, newspapers, illustrated weeklies and magazines, a mail box, etc.

The compartment Pullman contains seven compartments and two drawing-rooms, each compartment having two wide double berths, individual lavatory and toilet. Doors lead to adjacent rooms, permitting their occupancy en suite if desired. Each of the two drawing-room cars has seven drawing-rooms. Each drawing-room has two double berths, a sofa berth and an individual annex lavatory and toilet. Six of the drawing-rooms may be occupied en suite.

The dining car is built from special designs, which include a recently invented air-cooling and air-washing device that perfectly ventilates the car, the "indirect" system of electric lighting, and a new and particularly comfortable style of chair. The interior finish is vermilion mahogany. The club car has a commodious smoking and reading room for gentlemen, with a fully stocked buffet. Bulletins, giving the day's stock market report and important news items are received, and a writing desk and magazines are provided. A barber and a porter to press one's clothes are in attendance, and shower baths may be had in this car. The dining and club cars are under the Harvey management, all meals being served a la carte.

Other services not previously mentioned are those of a ladies' maid, who also is an expert manicure and hair-dresser, and a stenographer who takes dictations free of charge. Ladies are provided with California flowers a short time before arriving at Los Angeles. In addition to the cost of regular first-class railroad and sleeper tickets, an extra fare of $25 is charged in each direction between Chicago and Los Angeles.

RAILWAY REVIEW, CHICAGO, SATURDAY-DEC. 23. 1911.

Annual Meeting, Western Society of Engineers.

The board of direction of the Western Society of Engineers has planned some unusual features in connection with the annual meeting Jan. 10. It is hoped thereby to secure a large attendance from our out-of-town members who will find it convenient to visit Chicago during the month of January to attend the meeting and to renew and extend their acquaintances. The meeting will be preceded by an excursion to the McCormick works of the International Harvester company. These works are situated in the western district of Chicago and are probably the largest agricultural works in the world. The party will leave the Union depot at Canal and Adams streets at 12:30 p. m. via the Burlington R. R., and will return in the afternoon, in time to permit the members to dress for the annual meeting and banquet which will be held in the University Club at 6:30 p. m. The annual meeting will be addressed by the retiring and the newly elected presidents, and following this there will be two addresses on the subject of "Citizenship"; one by Dr. W. F. M. Goss, and one by Judge Marcus Kavanagh, of Chicago. The following day there will be an excursion to Pullman, to inspect the steel car shops of the Pullman Company; proceeding thence to the new bridge shops of the American Bridge Company, at Gary, Ind. The party will leave the Randolph Street station of the Illinois Central R. R. at 9 o'clock and will return over the Lake Shore road, reaching the city shortly after 5 p. m. Luncheon will be provided for the party immediately after reaching the shops of the American Bridge Company. In the evening there will be a smoker, held in the rooms of the Society, at 8 p. m., and during the course of the evening there will be a popular address on an astronomical subject by Professor Edwin B. Frost, head of the Yerkes Observatory. There will be music and refreshments during the course of the evening.

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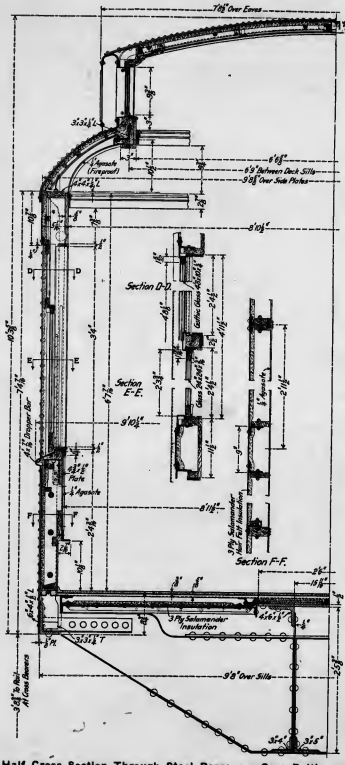
STEEL COACHES; BALTIMORE & OHIO.

The Baltimore & Ohio recently received 30 coaches from the American Car & Foundry Company, 20 smoking cars and 15 postal cars from the Pullman Company, and 10 baggage cars from the Barney & Smith Car Company. All of these are built entirely of steel, with the exception of the inside finish. The



Half Cross Section Through Steel Passenger Car; Baltimore & Ohio.

following description relates to the 70-ft. coaches, which have a seating capacity for 80 passengers. The construction of both the superstructure and the underframe represents the type of design which has been used by the American Car & Foundry Company for a large amount of equipment. The illustration of the cross section of the car shows in detail the principal features of this design. The center sills are 2 ft. 5⅜ in. deep at the center and are built up of a ¼ in. steel web with a 4 in. x 6 in. x ½ in angle at the top, one 3 in. x 4 in. and one 3 in. x 5 in. angle at the bottom, and the top cover plate ½ in. x 2 ft. 6 in. The side construction has a ⅛ in. steel plate extending from the window sill to the bottom of the side sill, with a 4 in. x 7/16 in. dropper bar at the top, and a 4 in. x 6 in. x ½ in. angle at the bottom.

The steel side construction is shown in the vertical section as well as in the horizontal sectional views. The wood inside finish extends between the bulkheads; from these to the ends of the car the construction is steel. The upper and lower decks are lined entirely with fireproof Agasote, and the same material is used in the space under the windows behind the heater pipes, wood being used only in the panels between and above the windows and for the moldings. The floor is covered with Flexolith, making it dust and fireproof. The reason for making the ends of the coaches beyond the bulkheads of steel interior finish was to protect the passengers against any splinters of woodwork should

Interior of Steel Passenger Coach.

there be an accident of sufficient severity to distort the end of the car; in such a case the steel would bend and form a cushion for these shocks and thus protect the interior passenger compartment from damage. Furthermore, the metal used in the interior of the toilet rooms furnishes a more substantial and satisfactory finish from a sanitary standpoint. In the vestibule windows and end doors fire retarding wire glass is used. This will not shatter or fly about in case of accidents.

The outside walls of the car are insulated on the inside all around, including the inner side of the roof, with three-ply salamander hair felt insulation, and the inside finish of Agasote, wood and Flexolith provides a second insulation, which should help to make the car comfortable in both winter and summer. In planning these cars the platform has been made more roomy by increasing the length to 3 ft. This will facilitate the discharge of passengers. The cars are lighted both by electricity with the head end system and by Pintsch mantle lamps. Considerable study has been given to the lighting of the Baltimore & Ohio

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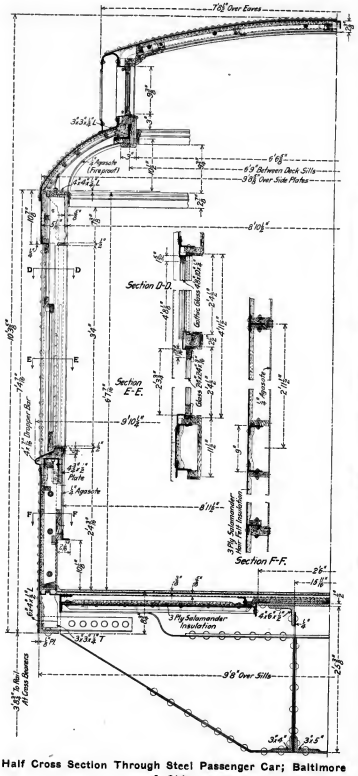

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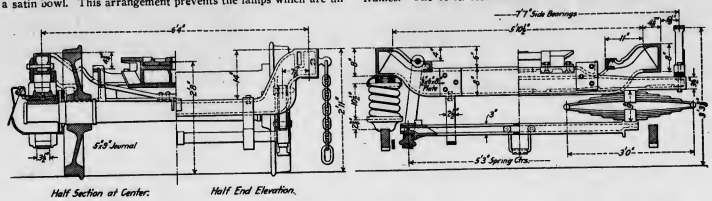

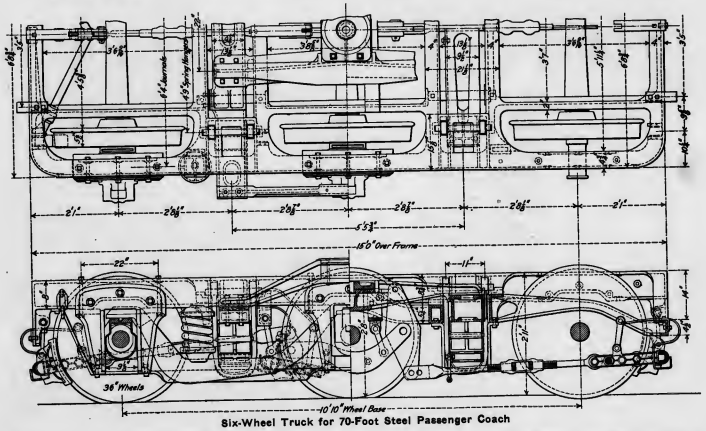

Six-Wheel Truck for 70-Foot Steel Passenger Coach

A bill recently introduced into the congress of Ecuador provides for the reorganization of the board in charge of the construction and administration of the railway from Ambata, Ecuador

Seventy-Foot Steel Passenger Coach; Baltimore & Ohio.

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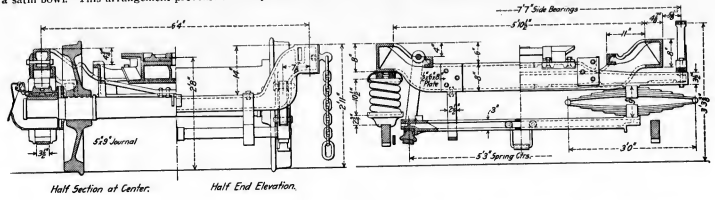

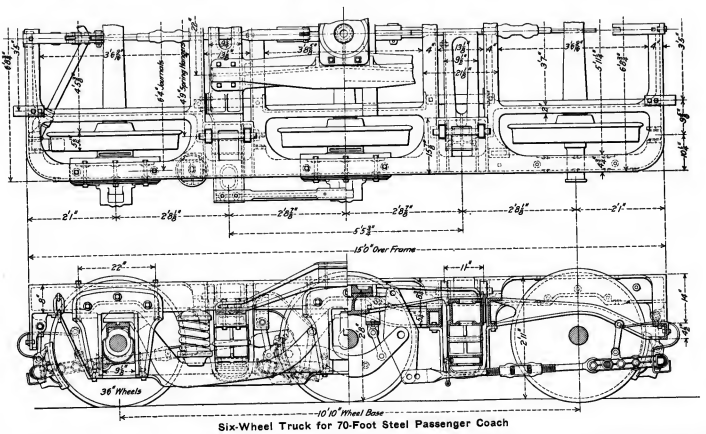

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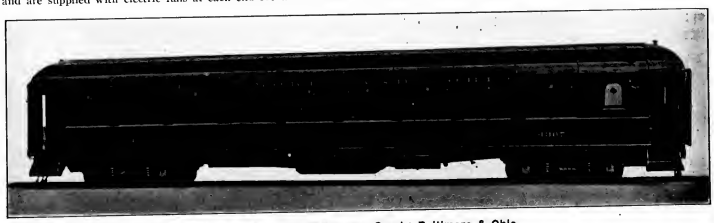

Seventy-Foot Steel Passenger Coach; Baltimore & Ohio.

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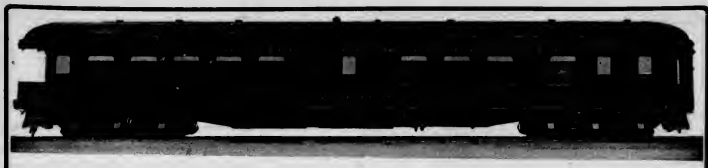


Observation-Buffet Car; Chicago, Milwaukee & Puget Sound.

Steel Framing For Observation-Buffet Car.

The Best Passenger Cars are None too good

Observation Room, Observation-Buffet Car.

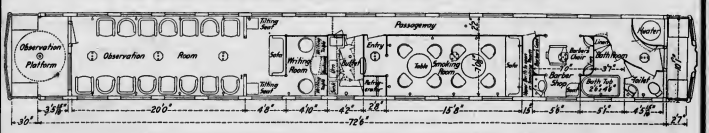
WE recently built a series of steel cars, including observation-buffet cars, compartment and tourist sleepers, combination mail and express cars, and baggage cars, for the Chicago, Milwaukee and St. Paul Railroad. These represent the latest achievement in car building, and were built to fill the present demand for cars which embody the very best of everything.

Railroads realize that, other things being equal, the road with the best cars gets the traffic. The favorable sentiment forming power of passenger cars is enormous; they are the railways' point of longest contact with its customers—the traveling public. Very often they are the only index by which the caliber of the road is judged.

These cars are practically alike in structural details. The underframing, superstructure framing, exterior sheathing and the roof are entirely of steel. The interior finish is of wood, thereby combining the safety and serviceability of steel construction with the comfort and rich finish of wood. No artistic effort has been spared on these interiors.

A point about these cars, which railway men will appreciate especially, is the skillful design by which great structural strength has been obtained without unnecessary weight.

Our figures on your requirements will stimulate your interest.



Plan of Observation-Buffet Car for the Chicago, Milwaukee & Puget Sound.

THE BARNEY AND SMITH CAR CO.

DAYTON, OHIO

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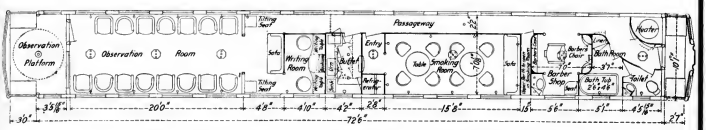
A point about these cars, which railway men will appreciate especially, is the skillful design by which great structural strength has been obtained without unnecessary weight.

Our figures on your requirements will stimulate your interest.



Plan of Observation-Buffet Car for the Chicago, Milwaukee & Puget Sound.

THE BARNEY AND SMITH CAR CO.

DAYTON, OHIO

Volume 30 Insert p102

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102

RAILWAY REVIEW - CHICAGO. SAT. JAN 13. 1912

New Sleeping Car Reservation Rules.

At a joint conference of representatives of a number of Eastern lines and the Pullman Company, held at Buffalo this week, new rules for making reservations for sleeping cars by wire were adopted for general application, and which, it is expected, will be put into effect shortly. At present the multiplicity of rules of different roads is often embarrassing to travelers, ticket agents and conductors.

locomotives a week.

—Mr. Morris Evan Ward, for the past eighteen years associated with the Chicago-Cleveland Car Roofing Co. as general sales agent, died last Sunday evening, January 7, at 6 o'clock at the Lakota hotel, Chicago. Mr. Ward was one of the most prominent men in the railway supply business and the news of his death is received with regret by a host of friends and business acquaintances. He was born in Waynesville, O., October 16, 1844. During the War of the Rebellion, Mr. Ward served for three years as a member of the thirty-fourth Indiana regiment, following which he became associated with a publishing house in Cincinnati, O., and later became correspondent for New York and other newspapers during the construction of the Union Pacific R. R., up to 1868. After a brief connection with the press in Omaha he established a newspaper at Georgetown, Col. In 1870 he became associate editor of the Denver News and in 1876 he accepted a position as financial editor of the Chicago Times, remaining with that paper until 1881, when he accepted the position of general agent for the Allen Paper Car Wheel Co., at that time an auxiliary organization of the Pullman Co. He later became general manager of the Wicker Re-

Mr. Morris Evan Ward.

frigerator Car Co., remaining in this position up until he became associated with the Chicago-Cleveland Car Roofing Co. Mr. Ward's funeral was held Wednesday afternoon, January 10.

Feb 23-1912

EXPERIENCE with steel passenger cars in accidents is accumulating rapidly, and the conclusion must be that their construction is well justified. Their behavior in severe collisions shows them to be not invulnerable; but their resistance under such destructive impacts has not been a disappointment to the builders, who understand the limitations of the strength due to shape and to materials. A correspondent in our issue of February 16 refers to the failure of the steel sleeper in the Chicago, Milwaukee & St. Paul accident at Odessa, and aptly remarks that this does not necessarily imply weakness in steel construction of passenger cars, but that the superstructure was sheared off because the strong steel underframe of the dining car was lifted above that of the sleeper and was necessarily converted into a huge shear. He also refers to the familiar examples where the front ends of locomotives (which represent a form of very strong steel construction which we can hardly hope to attain in the upper frame of passenger cars) have been sheared off by collision with other engines, or by rocks, and even by the wooden sills of freight cars. If passenger cars are made very strong by the use of steel construction they become a valuable protection to the passenger in many forms of accidents like those due to derailments, and when cars are rolled over, as in a recent accident on the Pennsylvania. When account is taken of the relative protection afforded by steel and wooden cars during the period in which the former have been in use it will doubtless be found that the steel car has demonstrated its valuable qualities; and unquestionably its construction will be continued in universal numbers. The federal requirement of steel postal cars for the protection of the mail clerks at the head of fast trains is of itself a strong recognition of the superiority and safety of steel construction.

a typical day's run with the same engine, but burning Illinois coal. The advance made by the Santa Fe in smoke abatement, since the introduction of Pocahontas coal as regular fuel, on all engines in Chicago, two years ago, may be readily noted by a study of Chart 1 in comparison with Chart 2.

The short duration of smoke when Pocahontas coal was used is particularly noticeable, owing to the rapid transition of smoke density from a condition of "smoke" to "clear" or "white." The analysis of the flue gases shows very complete combustion of gases for both fuels. This condition is to be expected on locomotives in this class of service, where the work is comparatively light and it is not necessary to force the fire at any time during the day. The large percentage of oxygen present in the flue gases, shows that a large excess of air was admitted so that the gases are highly diluted. This condition accounts for the low percentage of carbon dioxide.

The recorded results show that the total smoke from switch engines is much less in intensity from the use of Pocahontas than from the use of Illinois coal, and the duration of the maximum density period of smoke is much shorter. The stack showed "white" for 34 per cent. of the time with Pocahontas coal, as against 18 per cent. of the time with Illinois coal. The stack showed "clear" 42 per cent. of the time with Pocahontas coal and only 2 per cent. of the time with Illinois coal. It showed "smoke" 24 per cent. of the time with Pocahontas coal as against 80 per cent. of the time with Illinois coal.

The analysis of the gases showed no poisonous carbon monoxide gas present at any time for either of the coals. A large per cent. of excess air insuring complete combustion was present at all times. There were traces only of sulphur dioxide in all samples of gases from both coals.

The evaporation per pound of fuel was greater for Pocahontas than for Illinois coal, being only 85 per cent. as much for the latter as for the former coal. The fuel consumption per hour was light, averaging 386 lbs. for the Pocahontas and 457 lbs. for Illinois coal. The amount of cinders thrown from the stack was small, being only about 16 lbs. per ton of coal fired.

The steam jets were rarely used when burning Pocahontas coal; they were frequently used in order to hold down the density of the smoke when burning Illinois coal. In general the results of the test indicate a very decided reduction in total

DERAILMENT AT WARRIOR RIDGE, PA.

At Warrior Ridge, Pa., four miles west of Huntingdon, on the middle division of the Pennsylvania, on Thursday, February 15, at 11:52 a. m., an eastbound express train, the "Pennsylvania Limited," No. 2, was derailed by the breaking of a truck, and five persons were killed or fatally injured. There were about 100 passengers on the train, of whom about half were injured. The passenger cars were all overturned and the escape of such a large proportion of the passengers is attributed to the strength of the cars, which were of steel.

The train consisted of two locomotives, a postal car, a combination baggage and smoking car, two dining cars, three sleeping cars and a compartment observation car.

The part that failed was a broken lower arch bar of the right hand side of the forward truck of the tender of the second locomotive of the train, engine number 3350. The breaking of the arch bar caused the column bolt to break and allowed the arch bar to fall below the level of the rail. It wedged itself between the switch and stock rail at the Warrior Ridge water station, breaking five feet off the switch rail and canting the stock rail outward. This caused all the wheels back of this truck to be derailed, and the train left the track, with the exception of the postal car next to the engine, which with the rear truck of the tender re-railed themselves a short distance east of the derailment. The cars which left the track fell down a slope at the right of the tracks, some thirty feet.

Wreck on Pennsylvania Train No. 2 at Warrior Ridge, Pa., February 15.

Two passengers and three employees were killed or fatally injured and about sixty passengers and employees were injured, these employees being nearly all cooks and waiters in the dining cars. The train was running about fifty miles an hour. All of the derailed cars were of steel and while not much broken, parts of them were bent and badly damaged.

A picture of the wreck, taken from the high bluff at the left of the roadway, is reproduced herewith. Some of the cars lodged on the ice in what was formerly a lock of the old Pennsylvania canal. In the cars worst wrecked, the dining car and one other, much damage was done by one or more trucks being forced through the floor. It appears that all of the killed were in these two cars.

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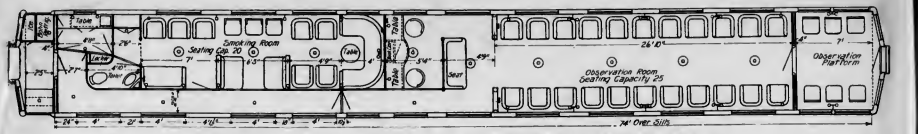


Plan Showing Arrangement of Compartments, Observation Cars for the Illinois Central R. R.

adopted. In the absence of conclusive figures it will be hard to convince experienced men that the cost of yarding and handling ties where they are to be put into and taken out of three separate receptacles is less than where they are yarded and handled into and out of one cylinder only.

Mr. Goltra says that with his method of seasoning about three months of air drying in the yard are required. It is not my experience that it requires from nine to twelve months to season pine timber in the air alone so that it can be properly impregnated with oil. Our pine ties have been cut in Texas and Louisiana and delivered to our plant in about thirty days thereafter, and they are ready for complete and successful impregnation after they have been yarded for a period of four months. In so far as we are concerned, Mr. Goltra's proposed method would save thirty days only in the period of seasoning. For that time the interest charge on stock in the yard is one-fifth of one cent per tie. If Mr. Goltra's method should eliminate all of this, it would accomplish the impossible and save little.

It must be apparent to the most superficial view that the excess cost of two or three excess handlings and interest on excess first cost of the plant and increased maintenance charges will be much greater than the interest on stock in the yard during the necessary excess period of air seasoning. If this view of the matter is not correct, it should be shown wherein it is incorrect by conclusive detailed figures derived from actual operation of a plant.

It would require too much space to discuss all of the surprising statements made in the article under consideration. One of these says: "The matter of quantity and cost of antiseptic is a secondary consideration." We do not find it so. It is costing us about 24 cents to treat our ties, of which the cost of creosote is 18 cents, using the Rueping process and leaving 2 gals. of oil in the tie. To secure the complete impregnation which we obtain we have to pump about 20 lbs. of creosote per cubic foot into the ties, and under the full-cell process that much oil would be left in the tie, if thorough saturation was secured.

If I understand Mr. Goltra's position correctly, he has condemned the Rueping process and advocates the full-cell process, saying: "The matter of first importance is to secure a thorough impregnation. The matter of quantity and cost of antiseptic is a secondary consideration." Accepting that as good and necessary practice, the oil in our ties would be costing us about 55 cents per tie, instead of 18 cents. We would not consider that a matter of secondary importance. We feel that having thoroughly saturated the tie with about 20 lbs. of oil per cubic foot, and leaving in 6 lbs., we have protected the tie against decay for a period of time fully equal to the life of the tie as limited by failure through mechanical wear and tear.

Another surprising statement is: "There are two causes of tie deterioration; decay and mechanical wear; and there is no economy in increasing resistance to one of these without also increasing resistance to the other." The ordinary pine tie will fail through decay in six years. If it was originally sound and should not decay, it would be serviceable, notwithstanding mechanical wear, for double that length of time. A preservative treatment that does not cost too much and which eliminates failure by decay and lengthens the life of the tie to 12 or 15 years, as against a service of six years, is unquestionably an economical thing. If Mr. Goltra's statement was true, he would convict the railways of this country of having foolishly squandered much money in preservative treatment of ties in the past. On the other hand, if a tie will fail through mechanical wear in 15 years there is no economy in leaving in the tie enough creosote to preserve it for 50 years, if a smaller amount will prevent decay for 15 years.

J. L. Campbell.

Observation Cars for the Illinois Central R. R.

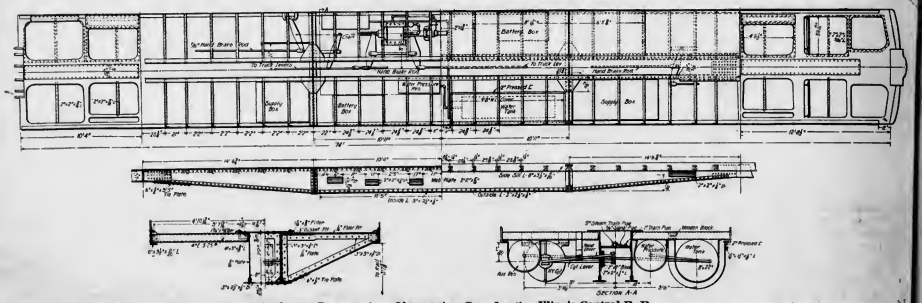
For the use on one of its solid Pullman trains, the Panama Limited, operating between Chicago and New Orleans, the Illinois Central R. R. has secured from the Pullman Company three splendidly appointed observation cars which are notable for the elegance of their equipment and from the fact that the rear or observation platform has been enclosed in such a manner as to form what is popularly termed a sun parlor. To provide this latter feature the usual steps at this end of the car have been omitted, and passengers accordingly enter and leave the car from the opposite end. A panel door makes it possible to pass through this car to others in the rear should it be necessary, through any contingency, to place the car elsewhere than at the end of the train.

In general dimensions the cars are 74 ft. long over end sills and are 9 ft. 9⅝ ins. in width over the side sills. With the exception of the interior finish, the cars are of steel construction throughout, involving the use of a double fish belly girder center sill made up of two ⅜ in. plate webs 26 ins. in depth and placed 16 ins. apart. These webs are reinforced at the bottom by two 3 by 2½ by ½ in. angles riveted on either side of the webs. The sill is provided with a ⅝ in. cover plate 28 ins. in width, to which the webs are secured through the medium of a pair of 4 by 3 by ⅝ in. angles. The middle portion of the center sill is straight for a distance of 21 ft. 10 ins. At either end of this portion is provided a cross bearer, consisting of ⅜ in. plates reinforced by 3 by 3 by ½ in. angles, and by means of which the cross bearers are secured to the webs of the center sills and to the side sills. From the cross bearers, the center sill tapers towards either end to a depth of 12½ ins., and makes connection with the cast steel end frame construction, the castings for which were furnished by the Commonwealth Steel Co. The fillers between the center sill members at the points where the cross bearers are used are of the same construction as the cross bearers.

For side sills there are used a pair 8 by 3½ in. angles with their shorter members turned toward the center of the car. The floor is supported between the center and side sills by a series of 4 in. by 5¼ lb. channels spaced approximately 24 ins. apart. The floor consists of ⅛ in. steel plate laid over the channels and covered over by a 1-in. course of air felt insulation. This in turn has placed over it a course of No. 20 Keystone flooring, and finally a layer of ⅝ in. flexolith as a finish.

In accordance with Harriman Lines standards the cars are provided with oval roofs, in which a series of 3½ by 1⅛ by ¼ in. angles are used for carlines. These carlines rest on 5 by 4 by 9/16 in. angle side plates which in turn are supported by means of angle iron side posts. The side sheathing below the belt rails is of ⅛ in. steel. Between the belt rails and the side plates the sheathing is ⅛ of an inch in thickness, while for the roof sheets ⅛ in. open-hearth steel sheets are used. One-half inch hair felt insulation is used inside the outside sheets below the belt rail, and between the tops of the windows to the side plates, as well as back of the head lining, the latter being supported in position on the carlines by means of the arched steel mouldings shown in the photographs.

The main compartments of these cars are finished in Cuban mahogany. The smoking room, the buffet, and the passage-way are finished in quar-



Underframe Construction, Observation Cars for the Illinois Central R. R.

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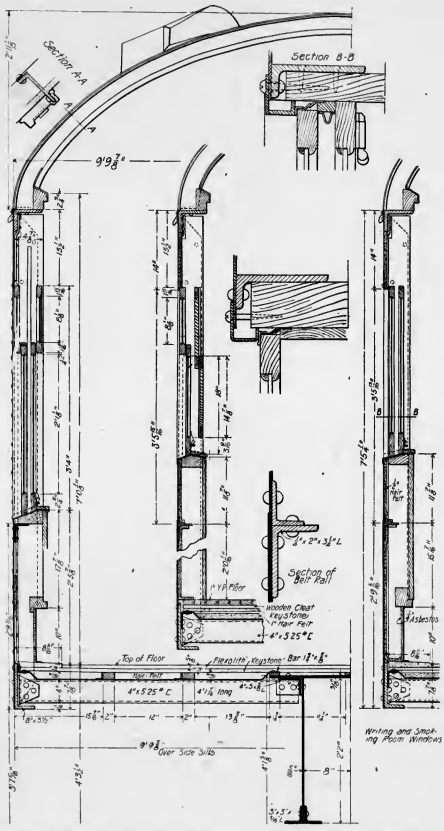
ter-sawed oak. The floor coverings consist of linoleum for the buffet, rubber tile in the passageway, and Wilton carpet in the remainder of the car. The curtains are of silf-faced pantasote except in the sun parlor, where monks' cloth draperies are used. Besides a number of sofas there are provided forty wooden frame chairs, twenty-two of which are placed in the observation room, ten in the smoking room, two in the writing room and six in the sun parlor. The upholstery in the main compartment is of tapestry, while in the smoking room and the sun parlor the chairs are upholstered in Spanish leather.



Cross Sections Showing Construction of Observation Cars, Illinois Central R. R.

The cars are heated by means of the Chicago Car Heating Company's vapor steam heating system, the smoking room being heated independently of the rest of the car. Lighting is effected by means of the Gould system, employing a type B 40 volt 3 k.w. belted generator in conjunction with which there is used a battery of 24 Edison cells. Ten Garland type C ventilators, with registers, are located at suitable points in the roof of the car. The plumbing is of the Watrous type, hot and cold water being provided in accordance with the Pullman Company's standard air pressure system. Single windows in two parts are used in the parlor, while all others have double sash, the outside ones being of mahogany, while the inside sash is made to correspond with the interior finish. The buffet is provided with a Bohn refrigerator placed on the platform opposite the steps. Among other conveniences provided for the patrons of these cars may be mentioned facilities for telephonic connection with local exchanges at either terminal or at points en route.

The trucks have one-piece cast steel frames and are provided with 36½ in. steel wheels mounted on axles with 5 by 9 in. journals. The bolsters are provided with Woods roller side bearings. Diamond special brake beams fitted with Christie partially flanged shoes are used. The brakes are of the New York Air Brake Company's high speed type with the American slack adjuster, providing a braking power equal to 90 per cent of the light weight of the car at 60-lb. cylinder pressure. Other special equipment, not previously mentioned, includes Forsythe buffers, Sessions friction draft gears, and Janney long shank couplers.

Head End Electric Train Lighting.*

While it is still an open question which system best meets railway conditions, head end electric train lighting is taking a more important place today than it ever has before in the railway world, and I believe will continue to hold its place in electric lighting of cars for a long time to come. While the general system of head end train lighting is the same as used 15 years ago, there have been a number of improvements and changes made. These, with the adoption of the new types of electric lamps, storage batteries, fixtures and reflector glassware, makes this system very efficient and reliable, where first-class uniform lighting is required on a heavy train.

A head end system, in brief, is one which uses, as its main source of current, a steam turbine driven dynamo placed either on the locomotive or in the baggage car, taking steam from the locomotive to operate it. Auxiliary lighting is maintained, when locomotives are changed or cars stand in terminals, by two, three or four storage batteries, depending on the number of cars in train. These batteries float on the main train wires in parallel with the dynamo, lighting the lamps should anything happen to the dynamo, turbine, steam hose or train part and pull out a connector.

One of the advantages of the head end system is that the number of cars put on the train to light is limited only by the number the locomotive can haul. Taking a seventeen mixed car train as an example, the equipment will consist of: one 25-kw. Curtis turbo-generator, 3600 r.p.m. 110-125 volts; switchboard and dynamo connection in baggage car; automatic loop connectors; standard 2-compartment tray of train lighting batteries. The train is made up as follows:

1 dynamo baggage car	14 lamps
2 mail cars	66 lamps
1 mail tender	8 lamps
1 comp. sleeper	60 lamps
1 12 section sleeper	80 lamps
1 buffet car	82 lamps
5 12 section sleepers	400 lamps
1 dining car	42 lamps
1 parlor car	42 lamps
3 coaches	78 lamps
17 cars	872 lamps

The lamps are all of the 104-volt, 8-c.p. type, and the total lamp load is 20,627 watts. The losses in machine and train lines is 22 per cent, so the load on dynamo is 25,219 watts, which is the full capacity of the machine. In actual operation we seldom get continual steam pressure enough to operate this load, so allow the storage batteries to help out until the number of lights is reduced, as passengers retire for the night.

Previous to April, 1910, we connected our batteries in parallel with the lamps on the two outside mains, allowing them to float on the lamp system. Later when the sleeper passengers had retired and the load was largely reduced we raised the dynamo voltage to 118 or 120 and gave the batteries what is known as a floating charge. One hundred and twenty volts is not high enough to charge the batteries properly but was as high as we deemed advisable to run our lamps. We found, however, that the batteries took a fairly good charge at 120 volts, and with an initial charge in the yard at full capacity twice a month they remained in good condition. Early in 1910 I went seriously into the subject of charging batteries on the trains, as our charging plants are small and the number of batteries to charge continually on the increase. Charging batteries enroute requires plenty of current, lamp regulation and means to determine the amount of charge and discharge the batteries are receiving.

While there are a number of very good automatic lamp regulators on the market, they are quite expensive and each car on the train has to have one. Owing to the large number of cars required to make up this train, the cost of automatic regulators would have been over $1700.00, and we cast about to see if we could not substitute some means to accomplish the desired results at less expense. Without altering or adding to the present three-wire standard this we have done by connect-

*Extracts from a paper by C. R. Gilman, chief electrician, C., M. & St. P. Ry., read before the Western Railway Club, Jan. 16, 1912.

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Interior of Main Compartment, Observation Cars for the Illinois Central R. R.

ing the battery to the same main wires as the dynamo and placing a hand-operated resistance in the main lamp return wire, in baggage car. This lamp resistance is brought into use by opening the connector loop in the rear of the train and closing it on the switch in the baggage car.

This system of charging has cut down the lamp renewals 30 per cent, has enabled us to do our charging on the road, and keeps the batteries in good condition. The controlling of the charge is done by having ampere hour meters in circuit with each battery. These are read at terminals and baggage men advised to charge more or less as the conditions demand.

Lighting a 17-car train having over 800 lamps, and being about a quarter of a mile long, is no mean undertaking, and on account of the heavy all night load, 75 amperes, it was found hard to keep the batteries charged and give satisfactory illumination. I, therefore, suggested to our people that we reduce the load on this train by adopting 60 volts, and using tungsten and tantalum lamps. It gave me great satisfaction, therefore, that our people allowed me to try it on the Pioneer Limited.

On November 10, 1910, this train arrived in the yard at 11:00 a. m., 110 volts, and when it left at 5:30 p. m. had been changed to 60 volts, lamped and tested. The operation that night was all that was expected and the lighting was beyond reproach.

To convert the 110-volt dynamo into a 60-volt machine, we placed an extra field rheostat in series with the old one and a shunt across the compound field terminals. I had previously tested out

"Sun Parlor" End of Observation Car for the Illinois Central R. R.

a number of these generators and knew just what to do with them. The cost of converting this machine from 110 to 60 volts is $7.50.

A comparison test sheet of this train at 64 volts with the test of the 104-volt train shows that the amount of steam required to operate the dynamo averaged about 18 pounds less; that the battery charging current available was 50 per cent greater; the voltage was more uniform; 12-candlepower lamps were used instead of 8-candlepower, increasing the light on the train 60 per cent.

There are five cost items that differ in each train operation, a comparison of which is given in the following tables:

Table of Costs, 110-Volt Train.

Coal for operating dynamo	$ 830.00
Batteries, cost of hauling	4181.70
Battery depreciation, 15 per cent	679.40
Yard labor	554.80
Lamp renewals	1046.40
	$7292.30

Table of Costs, 60-Volt Train.

Coal for operating dynamo	$ 660.00
Batteries, cost of hauling	2503.80
Battery depreciation	403.20
Yard labor	360.12
Lamp renewals	2704.85
	$6631.97
Total saving by 60-volt system	$ 660.33
Total C.P. 110-volt train	6976
Total C.P. 60-volt train	10464

While the difference in operating expense is not great, the lighting service is 100 per cent better. In fact, our operating troubles have been so greatly reduced, that where we formerly received constant reports of poor lighting, we seldom if ever now get a report of that kind.

Closing, I wish to say that the interchange of cars, on our western roads is on the increase, and a uniform voltage for the head end lighted trains is more than ever necessary, and I hope the day is close at hand when those roads that have not adopted the 60-volt system as standard will soon see their way clear to do so.

The place to discover lack of efficiency is plainly in the other fellow's business.—Bulletin of the American Railway Bridge and Building Association.

The Question of Nationalizing English Railways.

There now seems to be every right to assume that the government regards the question of the nationalization of railways as within the scope of practical politics, and there is some evidence to the effect that it is actually considering the ways and means by which the change could be accomplished. The two main grounds on which the state ownership of railways is urged are: that it is contrary to the national welfare that all the means of communication upon which the prosperity and comfort of the country depend should be in the hands of private individuals whose first object is the earning of dividends; that the danger of the stoppage of those means of communication, by reason of a strike, ought to be eliminated.

But railway communication is not the only thing upon which the well being of the whole community depends. We could not get on without shipping, or without coal, or without the services of the engineering trades; therefore, if the arguments of railway nationalizers are sound, the state ought to own and control those industries also. The answer to the second point is that state ownership would not guarantee us against strikes and stoppage. Recent events in France have taught us that government employees are rather more inclined to create labor troubles than other classes of work-people.

Nowhere, I venture to assert, are state-owned railways a success. If they pay their way it is at the expense of, the comfort and convenience of the public who suffer, as in Germany, under an iron-bound system which they cannot alter, and from the overbearing conduct of employees, who are able to presume on their position as government officials. When they do not pay, as in France, they are among the worst railways in the world. It will be said that we shall manage things better in England. I doubt it. The state owns the telegraphs and loses on them a million and a half a year. In the United States they are in private hands, the convenience of the public is consulted, and they pay.

The political aspect of the question is even more important than the economical—the enormous increase in the number of state employees, enough,

Interior of Main Compartment, Observation Cars for the Illinois Central R. R.

if they stand together, to form the deciding factor in elections; the vast extension of government patronage, and with it the increase of opportunities for jobbery and corruption on an immense scale.—London Standard.

Methods of Embankment Protection.*

We submit as our report a detailed description of practice in the protection of railway embankments and river banks in nearness thereto, as contained in several letters from members of our association, together with descriptions and illustrations of brush mattress work by the Mississippi River Commission, and of the Kerr gabion system. All of this information appears to us to be practical, and applicable to railroad situations, for it is frequently the case that vanishing river banks threaten the foundation of a railroad paralleling the stream. The only escape from destruction then lies either in changing the location of the railroad or in preventing further encroachment of the erosive currents. Therefore, railroad embankment protection often resolves itself into a scheme

*From the report of a committee to the American Railway Bridge and Building Association.

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ing the battery to the same main wires as the dynamo and placing a hand-operated resistance in the main lamp return wire, in baggage car. This lamp resistance is brought into use by opening the connector loop in the rear of the train and closing it on the switch in the baggage car.

This system of charging has cut down the lamp renewals 30 per cent, has enabled us to do our charging on the road, and keeps the batteries in good condition. The controlling of the charge is done by having ampere hour meters in circuit with each battery. These are read at terminals and baggage men advised to charge more or less as the conditions demand.

Lighting a 17-car train having over 800 lamps, and being about a quarter of a mile long, is no mean undertaking, and on account of the heavy all night load, 75 amperes, it was found hard to keep the batteries charged and give satisfactory illumination. I, therefore, suggested to our people that we reduce the load on this train by adopting 60 volts, and using tungsten and tantalum lamps. It gave me great satisfaction, therefore, that our people allowed me to try it on the Pioneer Limited.

On November 10, 1910, this train arrived in the yard at 11:00 a. m., 110 volts, and when it left at 5:30 p. m. had been changed to 60 volts, lamped and tested. The operation that night was all that was expected and the lighting was beyond reproach.

To convert the 110-volt dynamo into a 60-volt machine, we placed an extra field rheostat in series with the old one and a shunt across the compound field terminals. I had previously tested out

"Sun Parlor" End of Observation Car for the Illinois Central R. R.

a number of these generators and knew just what to do with them. The cost of converting this machine from 110 to 60 volts is $7.50.

A comparison test sheet of this train at 64 volts with the test of the 104-volt train shows that the amount of steam required to operate the dynamo averaged about 18 pounds less; that the battery charging current available was 50 per cent greater; the voltage was more uniform; 12-candlepower lamps were used instead of 8-candlepower, increasing the light on the train 60 per cent.

There are five cost items that differ in each train operation, a comparison of which is given in the following tables:

Table of Costs, 110-Volt Train

Coal for operating dynamo	$ 830.00
Batteries, cost of hauling	4181.70
Battery depreciation, 15 per cent	679.40
Yard labor	554.80
Lamp renewals	1046.40
	$7292.30

Table of Costs, 60-Volt Train.

Coal for operating dynamo	$ 660.00
Batteries, cost of hauling	2503.80
Battery depreciation	403.26
Yard labor	360.12
Lamp renewals	2704.85
	$6631.97
Total saving by 60-volt system	$ 660.33
Total C.P. 110-volt train	6976
Total C.P. 60-volt train	10464

While the difference in operating expense is not great, the lighting service is 100 per cent better. In fact, our operating troubles have been so greatly reduced, that where we formerly received constant reports of poor lighting, we seldom if ever now get a report of that kind.

Closing, I wish to say that the interchange of cars, on our western roads is on the increase, and a uniform voltage for the head end lighted trains is more than ever necessary, and I hope the day is close at hand when those roads that have not adopted the 60-volt system as standard will soon see their way clear to do so.

The place to discover lack of efficiency is plainly in the other fellow's business.—Bulletin of the American Railway Bridge and Building Association.

The Question of Nationalizing English Railways.

There now seems to be every right to assume that the government regards the question of the nationalization of railways as within the scope of practical politics, and there is some evidence to the effect that it is actually considering the ways and means by which the change could be accomplished. The two main grounds on which the state ownership of railways is urged are: that it is contrary to the national welfare that all the means of communication upon which the prosperity and comfort of the country depend should be in the hands of private individuals whose first object is the earning of dividends; that the danger of the stoppage of those means of communication, by reason of a strike, ought to be eliminated.

But railway communication is not the only thing upon which the well being of the whole community depends. We could not get on without shipping, or without coal, or without the services of the engineering trades; therefore, if the arguments of railway nationalizers are sound, the state ought to own and control those industries also. The answer to the second point is that state ownership would not guarantee us against strikes and stoppage. Recent events in France have taught us that government employees are rather more inclined to create labor troubles than other classes of work-people.

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different specifications; that some of these specifications increase the cost of production; and in some cases, even, would, if rigidly followed, produce an inferior grade of oil by throwing away the best part of the distillate. There is, therefore, much need for the consumers and the manufacturers to get together upon the various questions between them, and the industry with which both interests seem to he working is an assurance that needed light will he thrown upon the situation.

The matter of proper seasoning of the timber is evidently receiving better attention at preserving plants than it formerly did, being all important as affecting the penetrability of the wood by the preservative. Unless the wood is thoroughly seasoned when it is put into the retorts, steaming becomes necessary if desirable penetration is to he had, even ignoring views which hold that preliminary steaming is necessary in any event. It was also forcibly brought out in the convention that the time to begin air seasoning of the timber is the day it is cut in the woods, for even there it is far better that it he piled or stacked up, where the air can circulate around it, than to he left lying on the ground for six months before it is hauled out to market. We have seen untreated beech and birch ties in Pennsylvania removed from track because of decay after only two years of service. Such ties if left lying on the ground from the time they might he cut, say in January, until July, before being hauled out of the woods, would thus be subjected to such unfavorable conditions for a period equal to twenty-five per cent of the natural life of the timber, and one of the members was undoubtedly right in emphasizing the importance of marketing the timber and getting it to the treating plants as promptly as possible after it is cut.

The Report on the Steel Industry.

Herbert Knox Smith, commissioner of corporations, has submitted to President Taft the second installment of his report upon the steel industry of the United States. It was made public, Monday, January 22, and drew immediate interest in connection with the investigation into the "steel trust," now being conducted by a committee of the House of Representatives. This second report deals with the cost of production. It arraigns certain practices of the United States Steel Corporation, and to an extent denounces that company in its control of its iron ore and its railroad properties. The methods used in deriving the "book costs" of steel rails are cited specifically in connection with objectionable accounting practices, and the control of the railroad properties is asserted to be one of the corporation's most effective means of swelling the profits on its products.

In his letter of transmittal which accompanied the report, Mr. Smith, in explaining the "book costs" and "inter-company profits," speaks of the many companies under the Steel Corporation's control as "highly integrated"; that is, they link up under one control, through various subsidiaries, ore mines, blast furnaces, steel works, etc. But the cost accounts of each subsidiary are shown as though it were independent, and include profits paid to other subsidiaries. "To illustrate, one subsidiary of a combination operating blast furnaces, would pay to another subsidiary, which mined ore, a price for ore that included a profit to the ore company. This price would, however, he entered hy the furnace company as a part of its costs. That is, they were 'book costs,' and they included considerable profits really received hy the same interests."

The hureau deducted these intermediate transfer profits and derived cost data of its own; and the result was a wide margin between this revised cost and the "book cost." This margin of the "book cost" above the revised cost is so large that when carried through the many stages of production of the integrated company, it becomes, in the estimate of the hureau, of great importance. Specific instances with detailed cost figures are cited to illustrate this point. The case of steel rails is typical. In this instance, starting with the ore, there is a slight but comparatively insignificant inter-company royalty of two cents per ton. There are then intermediate profits in ore and in coke, as they enter into hessemer hig iron; furthermore, these costs, profits and freight to the furnace are multiplied hecause it takes about 1.8 tons of hessemer ore and over one net ton of coke for one ton of pig iron. The margin between the two sets of cost figures thus widens successively, until for hessemer rail ingots the integration cost is $12.77, and the hook cost is $17.45. On heavy standard hessemer rails the integration cost is $16.67 and the book cost is $21.53. The difference, $4.86, the report states, is about equally divided between transportation profit and transfer profit.

Special objection is made to the rates on ore on the Steel Corporation's railroads. The Commissioner's letter says: "The most significant profits were those on ore and on railroad transportation. In so far as the Steel Corporation enjoys monopolistic power, it lies chiefly in these two factors." And in further reference, Commissioner Smith says that the control of public agencies of transportation carries with it such possihilities of ahuse, that the question is raised, "whether public interest in this industry does not require a segregation of the ore railroads from the Steel Corporation."

In giving the above abstract of Mr. Smith's report we have omitted certain cautionary utterances dronned from time to time as the framer of the report realized the erroneous construction that might he placed upon it. The letter of transmittal says, for example: "The resulting 'revised cost' must, however, he handled with great caution. The margin between this revised cost and the selling price is, of course, much larger than the margin over the 'book cost,' hut, on the other hand, that larger margin must cover all the stages of production, and therefore a much larger investment. The profit above the 'hook cost' of a subsidiary is to he applied simply to the investment of that company. On the other hand, the profit above the revised cost of an integrated company, carrying through many stages of production, must be set against that entire investment."

It is precisely without such caution that the great majority of the newspapers han'led the report, and we think it is becoming to put some additional emphasis upon the other side of the argument. It may be true that some hranches of the Steel Corporation's business are conducted at an exorhitant profit, and it is undoubtedly true that whatever intermediate profits might he desired could he arranged with the maximum facility hy this system of transfer costs. But Mr. Smith fails to state what other method could be followed; on the contrary, he practically admits the necessity of this expedient. Speaking on the subject of steel rails, he says: "The intermediate profits which were eliminated to reach these low costs are the largest per ton in the industry. But they must he set against the most extensive investment per ton of product. The margin hetween these costs and selling prices must cover a return on all the agencies of mining, transportation and manufacture, from the ore and coal to the finished product."

Means must he provided for paying returns upon the investment in an ore property or a railroad, whether the property he owned directly hy the corporation, or hy a subsidiary; and if certain exigencies make it advisable to hold control through the medium of a subsidiary, there certainly would seem to be no other way to continue the payment of a reasonable return upon the investment hut hy these intercorporate profits. As an illustration which can not he controverted, suppose the Steel Corporation were to acquire control of a railroad through the purchase of a majority of the capital stock. The minority stockholders would surely be entitled to the same returns upon their stock that they were receiving before their road passed under Steel control. Should the Steel Corporation cut off their dividents hy selling transportation at cost to the proprietary company? Such a course would instantly he recognized as illegitimate; and yet under the guise of regulation, federal interference may enforce some system no less evil than this, unless handled with extreme discretion. We are not offering a defense of the Steel Corporation, its heneficent influence in the steel industry has long ago justified its existence; but we suggest, with this report as an illustration, that the question of federal regulation of corporations may he attacked with just as much chance for mischief as for good.

Railroad Officials Killed in Illinois Central Wreck.

A had wreck occurred on the Illinois Central R. R., early on the morning of Monday, January 22, at Kinmundy, Ill. Train No. 25, the New Orleans Express, which had left Chicago at 5:50 o'clock the previous evening, was standing taking water, and was struck from the rear hy train No. 3, the Panama Limited, which had left Chicago at 7:00 o'clock the evening before. The rear end of train No. 25 carried the private car of Mr. F. O. Melcher, second vice president of the Chicago, Rock Island & Pacific Ry. With Mr. Melcher as guests were J. T. Harahan, recently president of the Illinois Central R. R.; E. B. Peirce, general solicitor of the Chicago, Rock Island & Pacific Ry., and E. E. Wright, of Memphis, Tenn., assistant counsel of the Rock Island. The car was entirely demolished, and all of the four gentlemen named were instantly killed. The cars of both trains were of all-steel construction, with the exception of Mr. Melcher's private car, which was built entirely of wood. There was practically no damage to any of the cars hut the latter, and the injuries to the occupants of the halance of the train were slight. Other occupants of the private car, Byram Curry, secretary to Mr. Melcher, Thomas B. Bushee, attorney for the Rock Island, and two colored servants, were uninjured. The schedule of the two trains is only about 30 minutes apart at this point, but the foremost train was about 30 minutes late. A public hearing to place the hlame for the disaster, conducted hy the Illinois Central at Champaign, Ill., found the conductor and flagman of the foremost train, No. 25, guilty of negligence in not flagging hack or using fusees properly, and the engineer of train No. 3 guilty of negligence in failing to see the tail lights of the train ahead and in failing to observe a caution signal displayed hy a tower operator.

The four gentlemen who were killed occupied prominent places in railway affairs, and hosts of friends feel the keenest personal loss in the tragedy. We give below a sketch of their lives:

Mr. James T. Harahan was horn in Lowell, Mass., in 1843. He entered railroad service in 1864 at Alexandria, Va., subsequently hecoming a switchman on the Orange & Alexandria R. R. During the fall of 1865 and to the summer of 1866 he was in the employ of the Nashville & Decatur R. R. at Nashville, Tenn., after which, from 1866 to 1870, he was in the service of the Louisville & Nashville R. R. in various capacities. From 1870 until August, 1872, Mr. Harahan was in charge of the Shelhy R. R., following which until 1879 he was roadmaster of the Nashville & Decatur R. R. He then became superintendent of the Memphis line of the Louisville & Nashville R. R., which position he held until 1881. Subsequently, until December, 1883, he acted as superintendent of the New Orleans division of the Louisville & Nashville and on January 1, 1884, became general superintendent of the same road with jurisdiction south of Decatur, Ill. On July 1, 1884, he was appointed general man-

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Mr. James T. Harahan.

Mr. Frank O. Melcher.

ager of the entire line, remaining in this capacity, however, only six months, following which, until April 1, 1885, he was general superintendent of the Pittsburg division of the Baltimore & Ohio R. R. He then re-entered the service of the Louisville & Nashville as assistant general manager later becoming general manager of the road. From October, 1888, until November, 1890, Mr. Harahan was successively assistant general manager of the Lake Shore & Michigan Southern Ry., general manager of the Chesapeake & Ohio Ry. and general manager of the Louisville, New Orleans & Texas Ry. On November 1, 1890, he went to the Illinois Central R. R. as second vice president, becoming president of this company in November, 1906, continuing in that position until January 12, 1911, when he was succeeded by Mr. Charles H. Markham, the present president of the Illinois Central.

Mr. Frank Otis Melcher was born June 14, 1864, at Damariscotta, Me. He was graduated from Tufts College in 1887 and received a C. E. degree in 1895. He entered railway service in 1887 as instrument man on the Fitchburg R. R. He was gradually promoted to assistant engineer, chief engineer, division superintendent and general superintendent and on July 1, 1890, became division superintendent of the Fitchburg division of the Boston & Maine R. R. He resigned this position on November 1, 1902, to become superintendent of the Illinois division of the Chicago, Rock Island & Pacific Ry. On February 15, 1904, he became general superintendent of the Choctaw district of the same road, later becoming general manager of the Central and Northern districts and subsequently becoming second vice president of the road, which position he held at the time of his death.

Mr. Edward B. Peirce was born at Kosciusko, Miss., August 14, 1868. Mr. Peirce took his degree in law at the University of Mississippi in 1889. He practiced law at Van Buren, Ark., where he was attorney for a number of railroad lines. He became general solicitor and attorney for Arkansas for the Choctaw, Oklahoma & Gulf R. R., remaining in the service of this road until March 4, 1904, when he became attorney for Arkansas for the Chicago, Rock Island & Pacific Ry. Mr. Peirce had been general solicitor for the Rock Island since December 1, 1909, making his home in Highland Park, a suburb of Chicago.

Mr. Elbridge E. Wright was a son of General Luke E. Wright, former secretary of war, and made his home in Memphis, Tenn. He was about 30 years old and unmarried. Mr. Wright was assistant counsel for the Chicago, Rock Island & Pacific Ry. and vice president of the Arkansas & Memphis Railroad Bridge & Terminal Co.

Tests of Jacobs-Shupert Firebox.

OUTLINE OF TESTS TO BE CONDUCTED BY DR. GOSS, OF THE RELATIVE EFFICIENCY AND STRENGTH OF A LOCOMOTIVE BOILER WITH JACOBS-SHUPERT FIREBOX IN COMPARISON WITH NORMAL STAY BOLT FIREBOX.

The following announcement has been made by the Jacobs-Shupert U. S. Firebox Co. regarding a series of tests to be made beginning February 1st at Coatesville, Pa. The tests have been outlined by and will be made under the direction of Dr. W. F. M. Goss, dean of the engineering school of the University of Illinois, who will also prepare the report of the same:

These tests are to be made in the presence of whomsoever may desire to witness them. They are to be conducted at Coatesville, Pa., where a special testing plant has been erected. Upon the conclusion of the efficiency tests, the boilers are to be removed to a point about one-half mile distant, and prepared for the low water tests. Provision will be made for spectators to observe these tests without danger of injury in case of explosion.

There have been provided two boilers, identical in construction, except for the fireboxes. The principal dimensions are given below:

	Jacobs-Shupert Boiler	Stay Bolt Boiler
Outside diameter of shell of boiler at front end.....	70 in.	70 in.
Diameter of throat of boiler.	83⅞ in.	83⅞ in.
Number of tubes.....290		290
Length of tubes.....218 in.		218 in.
Diameter of tubes.....	2¼ in.	2¼ in.
Inside length of firebox.....109⅝ in.		109⅛ in.
Inside width of firebox.....	76⅝ in.	76¼ in.
Hight of top of crown of firebox above bottom of mud ring	73$\frac{5}{16}$ in.	74$\frac{1}{16}$ in.
Number of sections composing firebox	11	———
Diameter of radial stays.....	———	1 in.

Each firebox compartment is completely isolated from its tube compartment by means of an extension of the flue sheet: and the first series of tests,

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Number of tubes	290	290
Length of tubes	218 in.	218 in.
Diameter of tubes	2 1/4 in.	2 1/4 in.
Inside length of firebox	109 5/8 in.	109 1/2 in.
Inside width of firebox	76 3/8 in.	76 1/4 in.
Hight of top of crown of firebox above bottom of mud ring	73 5/8 in.	74 1/8 in.
Number of sections composing firebox	11	
Diameter of radial stays		1 in.

Each firebox compartment is completely isolated from its tube compartment by means of an extension of the flue sheet: and the first series of tests,

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known as series "A," will concern the determination of efficiency data for each firebox independently of its tube compartment.

Upon the conclusion of the series "A" tests, it will be necessary to dismount the boilers and disconnect the fireboxes and remove the blind diaphragm consisting of the extension of each flue sheet, and the boilers again will be put together and remounted on the testing plant for the tests of series "B," during which, therefore, each boiler will be in its normal condition. It is estimated that about two weeks' time will elapse between the tests of series "A" and the tests of series "B."

The boilers are designed for locomotive service and are, so far as possible, identical in their general dimensions. They differ from each other only in the construction of the firebox and its staying.

Three different series of tests are to be made, hereafter referred to as those of series A, B and C respectively.

Series "A" will consist of comparative tests to determine the relative amount of heat absorbed by the fireboxes of the two boilers under similar conditions of operation. The original construction of each boiler provides a diaphragm which will separate the water space of the boiler into two compartments, one of which includes the tube surface and the other the firebox surface. In the course of the tests these compartments are to be separately fed with weighed water, an arrangement which will permit of a separate determination of the heat transmitted by the firebox and by the tubes respectively. The series will consist of three evaporative tests upon each boiler. Tests No. 1 of this group will be made under low power; tests No. 2 will be made under average or normal power; and tests No. 3 will be made under maximum power. It is expected that the results obtained from these tests will disclose the difference in the heat absorbing capacities of the two fireboxes in question. The results will also give certain data which American engineers have long wished to know with reference to the relative capacity of a unit area of firebox heating surface as compared with the capacity of a unit area of tube heating surface.

Series "B"—The boilers will then undergo such reconstruction as may be necessary for the removal of the diaphragms. This accomplished, they will in each case be entirely typical of normal boilers in present day service; that is, one will be a normal stay-bolt boiler and the other will be a normal Jacobs-Shupert boiler. Each boiler will then be subjected to a series of three evaporative tests, under rates of power similar to those employed in series A. These tests will establish the evaporative efficiency and the capacity of the two boilers in question. In addition to data usually secured in ordinary boiler testing, it is proposed to attempt, by the use of special equipment, and also through the employment of expert assistance, to secure some information concerning conditions affecting the circulation in the two boilers. A comparison of the results of these tests should give an accurate measure of the relative performance of the two boilers under all possible rates of power.

Series "C"—After the completion of the efficiency tests, the two boilers are to be arranged for a test of strength under low water conditions—hereafter to be referred to as low water tests. The boilers are to be set in a location where their explosion would result in no harm to surrounding property and are to be equipped with instruments of observation located within shelter, to provide for the safety of the observers. In the course of these tests, the boilers are always to be operated at a predetermined rate of power, which rate shall be a close approach to the maximum that the boiler is capable of delivering. Each boiler is to be subjected to a progressive series of tests until the destruction, or serious deformation, of the firebox occurs, the series to begin and proceed substantially as follows:

Tests No. 1. In anticipation of this test, the boiler is to be brought into action and operated under normal conditions at the predetermined rate of power. These conditions secured, the feed is to be cut off until the water reaches the level of the upper surface of the crown sheet. The feed pump will then be started and the water level restored, after which, as a precaution insuring safety to observers, the pressure in the boiler will be reduced and a careful examination made of all parts. If necessary, the boiler will be cooled and even emptied after these tests. If minor defects appear, such as leaky staybolts, they will, so far as possible, be corrected before proceeding with the next test.

Test No. 2. Test No. 2 will be similar to Test No. 1, except that the water level will be dropped to a point one inch below the upper surface of the crown sheet.

Test No. 3. Test No. 3 will be similar to Test No. 1, except that the water level will be reduced to a point three inches below the top of the crown sheet.

Test No. 4. Test No. 4 will be similar to Test No. 1, except that the water level will be reduced six inches below the top of the crown sheet.

Test No. 5. Test No. 5 will be similar to Test No. 1, except that the water level will be reduced twelve inches below the level of the crown sheet.

The series of tests will be continued for each boiler until the defects are so serious as to require the reconstruction of the firebox.

Fuel—The fuel for all tests will be oil, the use of which will permit the satisfactory operation of fires during the low water tests, when the observers are at distance from the boiler. Supplementary tests with coal are contemplated.

Those interested in the tests are welcome to remain in Coatesville from the beginning until the end of the work, but it is realized that there will be many who are particularly interested in some certain phase of the tests or in some particular series. While it is impossible to state on just what date any certain test will be made, prospective visitors will be advised as early as possible.

A letter or telegram addressed to the Jacobs-Shupert United States Firebox Co., Coatesville, Pa., will receive prompt reply.

The tests of series "A" will begin on February 1, 1912. The low water tests will begin on or about April 1, 1912.

The works of the company are adjacent to the steel mills of the Lukens Iron & Steel Co., which are only a few minutes' walk from the railroad stations. Coatesville is about forty-five miles west of Philadelphia on the main line of the Pennsylvania.

Adverse Finding on Alabama Rate Laws.

The Alabama 2½-cent passenger fare law and the special commodity rate acts of 1907 are declared unconstitutional, in that the charges established are confiscatory, in a report filed with the United States Circuit Court by Special Master Thorington, appointed to take testimony in the suit brought by the Central of Georgia Ry. against the enforcement of these acts. The finding of the master follows the reports of Special Master Gunter in the Louisville & Nashville and the Nashville, Chattanooga & St. Louis case. The report of Special Master Thorington includes 300 pages, but the following quotations bring out a few of the salient points:

"Full compensation to employees should imply something more than a mere subsistence. To that should be added the possibility of gradual accumulation. With the present high cost of living to railroads themselves, and with no reasonable prospects for a material change, it would seem that the only method to enable railroad companies to meet other necessary expenses and afford their employees adequate compensation, is to permit them to earn a sufficient return on their property to meet all reasonable obligations and expenses, including more liberal provision for their employees and, after necessary improvements, to make a fair return to the stockholders, and then have proper administrative boards, or commissions, to see that the income is fairly distributed and applied to the several purposes above mentioned, and that it is not permitted to be used from year to year to the enrichment of those not entitled thereto instead of being applied for the benefit of those to whom it justly belongs.

"The excess cost of earning a dollar in intrastate traffic in the Central's business is found to be 15 cents more than in all traffic; 10 cents more to earn a dollar in intrastate freight traffic than in all freight traffic, and 5 cents more to earn a dollar in intrastate passenger traffic than in all passenger traffic.

"The effect of rate reduction has not been to stimulate either the freight business or the passenger business. Both classes of business began to increase several years before the statutes, and a like normal increase continued after the enactment of the statutes. This is true in the country generally and throughout the southeastern territory, including Alabama and Georgia.

"It results, from what has been said, that the special master finds and reports that the Eight Group Acts, and other acts complained of, to the extent that they prescribe passenger and freight rates, prevent the Central of Georgia Railway Co. from realizing a just and reasonable return on the value of its property invested by it in, and devoted to public use in the state of Alabama in its railroad business, and thereby deprive it of its property without just compensation and without due process of law."

Railway and Engineering Literature.

The T. H. Symington Co., of Baltimore, Md., has issued a new and attractive booklet illustrating and describing the Parlow draft rigging. The text is subdivided under three heads, mechanical, transportation and economic. The best method of assembling is illustrated and described for the benefit of car foremen and others interested in the proper application of the draft rigging to the car frame.

"Politeness Pays" is the legend of a booklet by Elbert Hubbard, with the sub-title "Thinks thought on a little journey over the Grand Trunk." In his characteristic vein he discourses of the positive courtesy he found and of the difference between that and the negative rule not to be discourteous. The truth is not concealed by his style of juggling with words; in fact, it is perhaps more effective than it would be if written in the good English to which he is not a stranger.

Record No. 71, Baldwin Locomotive Works, gives illustrations and details pertaining to fourteen different designs of locomotives for industrial and contractors' use, which that firm has built to meet the special requirements of that class of service. The engines range in weight from 12,000 lbs. for a 2-ft. gage industrial track to 265,000 for a standard gage eight-coupled engine, having a tractive power of 41,200 lbs.

"Revue de l'Engenieur et Index Technique." This review, which has heretofore been an index of the principal articles appearing in about 300 technical periodicals, has been enlarged and now contains in addition to this valuable index, a considerable number of original and other technological articles. It will be found valuable to those wishing to keep in touch with engineering and technical periodical literature throughout the world. A specimen copy may be had by remitting 30 cents to l'Administration de la Revue, 88 rue de Ruysbroeck, Brussels, Belgium.

The Chicago, Milwaukee & St. Paul Ry. has issued an attractive illustrated pamphlet entitled, "The New Steel Trail, Lake Michigan to Puget Sound." Every page is tinted in imitation of the side of a steel car, and the text and accompanying views unfold the impressive scenes in the trip of the elegant steel trains, the Olympian and the Columbian, in their journey from Chicago to Seattle and Tacoma.

A neat little book of panoramic pictures of orchard and farm scenes in Colorado, Utah and New Mexico has been issued by the passenger department of the Denver & Rio Grande R. R. Its title is, "The Land of Irrigation," and the illustration, which comprise the greater part of the booklet, convey an excellent idea of the various fertile valleys of the Rocky Mountain region.

Indirect Lighting in Mr. Yoakum's Private Car

The adaptation of indirect lighting to railway cars has not been attempted until recently, and it is, therefore, interesting to be able to note the results obtained by this method of lighting on the first car so equipped. The private car of Mr. B. F. Yoakum, chairman of the board of directors of the Frisco Lines, using indirect lighting, was placed in service in November, 1911. This car was built at St. Charles, Mo., by the American Car & Foundry Co., and the lighting fixtures were designed and built by the Safety Car Heating & Lighting Co., of New York.

It is obvious that the dimensions of a railway car do not make the most ideal conditions for indirect lighting. The low ceilings and the customary mahogany panels and trim in the car prevent the best results. It is found, in this instance, however, by actual measurement of the illuminations obtained, that the results are very satisfactory.

The interior views of the dining and observation rooms on this car, shown herewith, give a very good idea of the design of the fixtures used. In the dining room, the bowl of the fixture is made of leaded glass of such a density as to permit of sufficient illumination of the color design, but not to allow any useful light to pass through. The bow-

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Dining Room of Mr. Yoakum's Private Car, Showing Indirect Lighting Fixture.

is mounted to the metal band, which is supported from the ceiling by cast bronze chains. The fixture in the observation room is identical with that in the dining room, excepting the bowl. The bowl of this fixture is made of leaded glass of greater translucency than the glass used in the dining room bowl, in order that some useful direct illumination is available.

The arrangement of the lamps and reflectors in these fixtures is somewhat unusual. Mounted at regular intervals inside the bronze band are twelve porcelain receptacles, using tungsten lamps. The lamps are held in a horizontal position so that the maximum light is thrown on the ceiling directly and by reflection. The reflector consists of a polished nickel band located under the lamps and of sufficient width to intercept the maximum downward flux of light.

The ceiling in the dining room is chalk white and the ceiling in the observation room ivory or cream white. The side walls, panels, etc., in both rooms are light mahogany. The carpet is dark green. The metal portion of the fixtures is finished in verde antique.

Readings of the illumination made with a Sharp-Miller illuminometer three feet above the floor with the car furnishings exactly as used in service, showed the light to be ample in both rooms. But aside from the results of the readings, it is stated that observation of the light by the occupant of either of the rooms produces a pleasing effect.

Four direct lighting lamps mounted underneath the lower deck in each room, are provided for use in case more illumination is required at any time than that obtained by the indirect lighting fixtures.

Observation Room of Mr. Yoakum's Private Car, Showing Indirect Lighting Fixture.

RAILWAY NEWS.

Alabama & Northwestern.—The Alabama & Northwestern R. R., recently purchased from the Vredenburg Lumber Co. by John T. Cochrane of Mobile, has, it is officially announced, been incorporated and is now conducting passenger and freight service between Pine Hill, Ala., on the Southern Railway, and Vineland, Doyle, Dixons Mills, Sweetwater, Nanafalia, Nicholsville and several other places. The officers are: John T. Cochrane, president; W. C. Cochrane, vice-president; William Toxey, chief engineer; P. C. Bprne, superintendent. The headquarters are at Mobile, Ala. Capital stock, $160,000.

Baltimore & Ohio.—The Baltimore & Ohio R. R. has sold $10,000,000 four and one-half per cent equipment trust certificates. Speyer & Co. purchased $5,000,000 and Kuhn, Loeb & Co. took the other $5,000,000. The notes are issued up to 90 per cent of the cost of equipment for the purchase of which they were issued. They mature 10 per cent annually from February 1, 1913.

Chicago, Milwaukee & St. Paul.—This road has declared a semi-annual dividend of 2½ per cent on its common stock. This is one per cent lower than the company's usual semi-annual dividend. The regular semi-annual dividend of 3½ per cent was declared on the preferred stock. Both dividends are payable March 1 to stock of record February 5.

Chicago, Rock Island & Pacific.—The Chicago, Rock Island & Pacific Ry. has announced that through sleeping car service to California, through Colorado, operated prior to September 1, 1911, which was temporarily suspended, will be resumed from Chicago on January 28.

Erie Railroad.—The Erie R. R. built 48.75 miles of second track during the year 1911.

Florida East Coast.—The Florida East Coast Ry. inaugurated through service to Key West, Fla., on January 22, making the main line 521 miles in length.

Georgia & Florida.—The Georgia & Florida Ry. has readjusted the titles of its officials in accordance therewith as noted in the Personal column in this issue and in our issue of January 20. This is the system which has been extensively introduced on the Harriman Lines, by the originator, Major Charles Hine.

The Georgia & Florida Ry. has submitted its fourth annual report to the stockholders. It covers the fiscal year ended June 30, 1911. Gross earnings were $704,936, increase as compared with the preceding year $183,697, or 35 per cent. Operating expenses were higher, and their ratio to gross was 81 per cent, as compared with 78.2 in the previous year. Net earnings were, however, $133,799, an increase of $20,411, or 18 per cent.

Grand Trunk Pacific.—The Grand Trunk Pacific Ry. dock on the water front of Seattle, Wash. has been leased by the Alaska-Pacific Steamship Co. for 10 years. The dock and available facilities represent an investment of $850,000.

Minnesota, Dakota & Western.—The Minnesota, Dakota & Western Ry. contemplates the construction of 18 miles of main line track during the present year.

New York, Chicago & St. Louis.—The New York, Chicago & St. Louis R. R. has declared an annual dividend of 3 per cent on the common stock. The regular semi-annual dividends of 2½ per cent on the first and second preferred stocks were also declared. Dividends are payable March 1 to stock of record February 2.

Southern Railway.—The Southern Railway, it is reported, will build second track from Bulls Gap to a point about halfway between Russellville and Morristown, Tenn., with a branch to the Ashville route near Roe Junction.

The Southern Railway has announced that the Atlanta, Birmingham, Columbus and Mobile operating divisions, formerly known as the Western district, will be operated as the Southern district

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MICHIGAN TRADESMAN
PUBLISHED WEEKLY — TRADESMAN COMPANY PUBLISHERS — $1 PER YEAR

E. A. STOWE, EDITOR.
BARNHART BLOCK, CORNER IONIA AND LOUIS STREETS
GRAND RAPIDS, MICH.

Rec'd

February 23, 1912.

Pullman Palace Car Co.,
Chicago, Illinois.

Gentlemen:

Enclosed herewith find clipping from this week's issue of the Michigan Tradesman, which we think you will enjoy reading.

Yours truly,

E. A. Stowe

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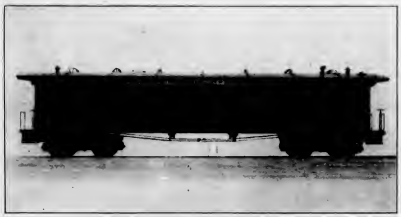
GEORGE M. PULLMAN.

Proud of His Successes, He Concealed His Failures.

Written for the Tradesman.

Several months ago the Michigan Tradesman published a number of sketches reciting incidents in the lives of George M. Pullman, the builder and operator of sleeping cars and the founder of the Pullman Palace Car Co., and members of his family. Those sketches attracted widespread attention and in the comment which followed many additional facts in relation to the Pullman family were brought out. The editor of the Tradesman received a number of letters in which the writer discussed the subjects of the sketches, and the editor entered into correspondence with officials of the Pullman Palace Car Co. for the purpose of verifying the truth of the statements published or for correcting the same, if proven to be erroneous. He also interviewed a number of old residents of Grand Rapids with the same purpose in view. As a result of these activities, the fact remains that the sketches so published were substantially true.



No. 1

Previous to the year 1859 George M. Pullman, his three brothers and several sisters were residents of Grand Rapids. William Widdicomb, whose memory is retentive and usually correct, says Mr. Pullman never was a resident of the city. Eugene E. Winsor and John Mowatt, an employe of Mr. Pullman in the early years of his business in building sleeping cars, are positive that he resided in Grand Rapids a short time. Mr. Winsor was engaged in selling groceries, occupying a little store on Monroe street in 1857-8. George M. Pullman lived in a small house, on Prospect hill, at a point that is now in the rear of the Ledyard building. Entrance to the house was gained by a pathway over a vacant lot, on the north side of Monroe street, now covered by the Friedman store. Mr. Winsor supplied him with groceries and met him almost daily. His means were limited and Mr. Winsor experienced much difficulty in collecting his bills. Under the firm name of A. B. Pullman & Co., the brothers operated a small cabinet shop, located on Erie street, in the rear of the Winegar Furniture Co.'s store. The furniture produced was sold at retail. After the failure of the firm and the departure of George M. Pullman for Chicago, he, with the aid of an uncle, engaged in the business of raising buildings there. A. B. Pullman made furniture by hand in a small frame shop adjoining the buildings of Oliver Bleake, southeast corner of Fulton and Lagrave streets. During a visit of the writer with Gregory M. Luce, of Mobile, Ala., Mr. Luce stated that his father, the late Ransom C. Luce, had pointed to the shop several times while he (Gregory) lived at home and remarked that A. B. Pullman had "manufactured furniture by hand in that shop." Mr. Gregory M. Luce stated that quite a number of pieces of Pullman furniture are still in use in Grand Rapids and that a "what-not" which he made is in the old home of his father. A letter written by Hon. Charles W. Garfield, dated Biloxi, Miss., February 2, 1912, contained this sentence, "The Pullman's (George M. and A. B.) moved the barn of my uncle, Joel C. Simonds, about the years 1857-8 to its present location on Alger avenue, on the Baxter place, from its former position on Burton avenue, just south of the present Garfield lodge, on the playgrounds." Readers of the sketches will remember that George M. Pullman was engaged in moving buildings on the route of the Erie Canal before taking up his residence in Grand Rapids and that before moving to Chicago he sold the rollers, windlass and tools used for that purpose to Harry H. Ives. Probably the apparatus was used in moving the barn of Mr. Simonds, as stated by Mr. Garfield.

George M. Pullman was proud of his successes but not of his failures. He was not unlike many other men in that respect, although no proofs are needed to sustain the generally admitted fact that many great fortunes have been built and many important enterprises carried to a successful termination by men who had failed in business. The late C. C. Comstock came to Grand Rapids burdened with a debt of $50,000. For a time he carried on a modest business as agent. A few years later he paid off his debts in full, although outlawed. When he died he left property worth upwards of one million dollars. Marshall Field, in his youth, was not regarded as of much account because his employer considered him a failure as a common salesman. The record of his subsequent life in business is so well known that further discussion of the subject is unnecessary. Charles R. Sligh and John D. Case failed as manufacturers of bicycles. They paid up their losses in full several years after the claims against them had become uncollectable in law and have prospered amazingly since. The Widdicomb Mantel Co., the Oriel Cabinet Co. and the Luce Furniture Co. failed, but recovered and won marked success under one and the same management. The French failed in their efforts to construct a ship canal across the Isthmus of Panama. The Americans bought the abandoned plant and next year, probably, they will complete the canal. Really it seems that in many instances failure is but the stepping stone to success.

Mr. Pullman was not the first to construct sleeping cars. He found a number in use on the railroads of New York State before he engaged in the building of such cars. They were crude in design, as were his own. Aside from providing bunks upon which travelers might rest, they contained but few conveniences. The cut (No. 1) shown herewith represents the first Pullman car—an ordinary coach converted into a sleeper. The interior (see cut No. 2) shows that little change had been made in its appearance. No. 2½ shows the old-fashioned wood burning stove and the box filled with wood, the only means provided for heating the car. The upper berth construction, a very important feature of the perfected car, is lacking. No. 3 shows how the bedding was disposed of when not in use and one of the smoky, ill-smelling oil lamps used at night. The upper berth was designed and patented by William Ellingwood, an ingenious cabinetmaker, employed by Mr. Pullman in supervising the conversion of ordinary day coaches into sleepers. John Mowatt and Eugene E. Winsor agree upon this point. Ellingwood sold his invention to Mr. Pullman and the latter thereby gained possession of the most essential feature, mechanically considered, necessary in the construction of sleeping cars. Mr. Winsor kept in touch with the Pullmans many years after they left Grand Rapids and is well posted in regard to their transactions. On one occasion he met George M. and Albert B. Pullman at the Fifth Avenue Hotel, New York. They were awaiting the sailing of a steamer upon which they had engaged passage. Their mission was the introduction of the Pullman sleepers upon the railroads of Europe. Mr. Winsor was invited to make the trip with the brothers as their guest.

No. 2

In his correspondence with the officials of the Pullman Palace Car Co. the editor of the Tradesman learned that a history of the Pullman sleeping car had been published during the life of Mr. Pullman, under his personal supervision and issued with his approval. In this history Mr. Pullman omitted the facts concerning his early experiences as a mover of buildings on the line of the Erie Canal, in New York, and his failure as a manufacturer of furniture in Grand Rapids. Like a certain very prominent manufacturer, who commenced his business career in Grand Rapids, with less than $300 capital and a fac-

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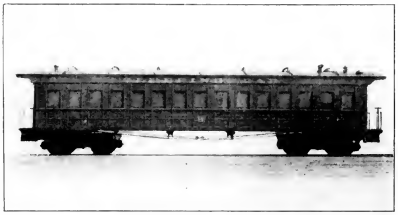

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Previous to the year 1859 George M. Pullman, his three brothers and several sisters were residents of Grand Rapids. William Widdicomb, whose memory is retentive and usually correct, says Mr. Pullman never was a resident of the city. Eugene E. Winsor and John Mowatt, an employe of Mr. Pullman in the early years of his business in building sleeping cars, are positive that he resided in Grand Rapids a short time. Mr. Winsor was engaged in selling groceries, occupying a little store on Monroe street in 1857-8. George M. Pullman lived in a small house, on Prospect hill, at a point that is now in the rear of the Ledyard building. Entrance to the house was gained by a pathway over a vacant lot, on the north side of Monroe street, now covered by the Friedman store. Mr. Winsor supplied him with groceries and met him almost daily. His means were limited and Mr. Winsor experienced much difficulty in collecting his bills. Under the firm name of A. B. Pullman & Co., the brothers operated a small cabinet shop, located on Erie street, in the rear of the Winegar Furniture Co.'s store. The furniture produced was sold at retail. After the failure of the firm and the departure of George M. Pullman for Chicago, he, with the aid of an uncle, engaged in the business of raising buildings there. A. B. Pullman made furniture by hand in a small frame shop adjoining the buildings of Oliver Bleake, southeast corner of Fulton and Lagrave streets. During a visit of the writer with Gregory M. Luce, of Mobile, Ala., Mr. Luce stated that his father, the late Ransom C. Luce, had pointed to the shop several times while he (Gregory) lived at home and remarked that A. B. Pullman had "manufactured furniture by hand in that shop." Mr. Gregory M. Luce stated that quite a number of pieces of Pullman furniture are still in use in Grand Rapids and that a "what-not" which he made is in the old home of his father. A letter written by Hon. Charles W. Garfield, dated Biloxi, Miss., February 2, 1912, contained this sentence, "The Pullman's (George M. and A. B.) moved the barn of my uncle, Joel C. Simonds, about the years 1857-8 to its present location on Alger avenue, on the Baxter place, from its former position on Burton avenue, just south of the present Garfield lodge, on the playgrounds." Readers of the sketches will remember that George M. Pullman was engaged in moving buildings on the route of the Erie Canal before taking up his residence in Grand Rapids and that before moving to Chicago he sold the rollers, windlass and tools used for that purpose to Harry H. Ives. Probably the apparatus was used in moving the barn of Mr. Simonds, as stated by Mr. Garfield.

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Mr. Pullman was not the first to construct sleeping cars. He found a number in use on the railroads of New York State before he engaged in the building of such cars. They were crude in design, as were his own. Aside from providing bunks upon which travelers might rest, they contained but few conveniences. The cut (No. 1) shown herewith represents the first Pullman car—an ordinary coach converted into a sleeper. The interior (see cut No. 2) shows that little change had been made in its appearance. No. 2½ shows the old-fashioned wood burning stove and the box filled with wood, the only means provided for heating the car. The upper berth construction, a very important feature of the perfected car, is lacking. No. 3 shows how the bedding was disposed of when not in use and one of the smoky, ill-smelling oil lamps used at night. The upper berth was designed and patented by William Ellingwood, an ingenious cabinetmaker, employed by Mr. Pullman in supervising the conversion of ordinary day coaches into sleepers. John Mowatt and Eugene E. Winsor agree upon this point. Ellingwood sold his invention to Mr. Pullman and the latter thereby gained possession of the most essential feature, mechanically considered, necessary in the construction of sleeping cars. Mr. Winsor kept in touch with the Pullmans many years after they left Grand Rapids and is well posted in regard to their transactions. On one occasion he met George M. and Albert B. Pullman at the Fifth Avenue Hotel, New York. They were awaiting the sailing of a steamer upon which they had engaged passage. Their mission was the introduction of the Pullman sleepers upon the railroads of Europe. Mr. Winsor was invited to make the trip with the brothers as their guest.

No. 2

In his correspondence with the officials of the Pullman Palace Car Co. the editor of the Tradesman learned that a history of the Pullman sleeping car had been published during the life of Mr. Pullman, under his personal supervision and issued with his approval. In this history Mr. Pullman omitted the facts concerning his early experiences as a mover of buildings on the line of the Erie Canal, in New York, and his failure as a manufacturer of furniture in Grand Rapids. Like a certain very prominent manufacturer, who commenced his business career in Grand Rapids, with less than $300 capital and a fac-

WM. D. BATT
Dealer in
HIDES, FURS, TALLOW AND WOOL
22-124 Louis St. Grand Rapids, Mich.

Hart Brand Canned Goods
Packed by
W. R. Roach & Co., Hart, Mich.

Michigan People Want Michigan Products

The Clover Leaf Sells

GRAND RAPIDS REAL ESTATE BUREAU
Office 424 Houseman Blk.
If you wish to locate in Grand Rapids write us before you come.
We can sell you property of all kinds.
Write for an investment blank

Tanglefoot
The Original Fly Paper
For more than 25 years the Standard in Quality

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Envelope
Foldout
✓Insert

Volume 30 Insert p106a

tory capable of producing goods worth $1,200 in one year, he seemed to scorn the weak and wabbly ladder by which he ascended to a firm financial footing. The editor of the Tradesman wrote a letter to the publisher of The Story of Pullman, ask-

No. 2½

ing for information concerning the work, and received the following reply:

"In response to your esteemed favor, I am sending you, under separate cover, a biographical sketch of George M. Pullman that was prepared under his personal supervision and revised from time to time, in which I was a participator with him during his various visits to this city when I conferred with him accordingly, and I am inclined to think that it is about as complete and correct a biography as has ever been made. I may say it was in course of preparation for upwards of a year before it was made complete and perfect to his satisfaction, and it was prepared a very short time before he died.

"On looking it over I do not see anything about Grand Rapids in it, so I am rather inclined to think that he never lived there, although, of course, I can not verify that fact, but it seems feasible that he would have mentioned it to my editor or myself during the various interviews we had with him from time to time, and while corrections were being made."

In the opening paragragh, referring to Mr. Pullman, a noted French painter, who had earned fame and fortune because he had neglected nothing, is quoted: "Fidelity to this maxim makes all the difference between success and failure." He continues, "The power to focus all the faculties upon one's life work, to see the extraordinary within the ordinary, the great within the little and to bring to the solution of minutest details the inspiration of a capacious mind, is at once the test and proof of greatness and the mainspring of all success."

Mr. Pullman was the possessor of these important faculties and during his life he was faithful to his allegiance to the maxim of the French painter. Without question Mr. Pullman saw the extraordinary within the ordinary, as illustrated in the moving of Mr. Simonds' barn and the raising and moving of great business buildings and hotels which he conceived and carried on successfully in Chicago; in his vision of the magnificent sleeping and parlor railway coaches bearing his name to-day while engaged in converting the common day coach into the primitive sleeper of 1860. The book says: "Mr. Pullman located in Chicago in 1859. He was engaged from 1852 to 1857 in moving buildings on the Erie Canal." In the absence of evidence to the contrary, it is fair to presume that he lived in Grand Rapids in the latter years. The book does not state where he lived during the year 1858. His first serious attenton to the idiscomforts of travel by rail dates from a night journey made from Buffalo to Westfield. The narrative continues: "It was a sixty mile ride and Mr. Pullman occupied a bunk in one of the clumsy sleeping cars then in vogue. These cars were modeled after the sleeping bunks in use on the passenger boats of the canals and consisted of three tiers of shelves on each side of the car. What especially appealed to Mr. Pullman was the provision in the rear end of the car of a towel and basin and water, wherewith he could make his toilet." The important upper berth had not found a place in his mind at that time. The opportunity to remodel a day coach and make it fit for sleeping purposes occurred in the year 1859. Mr. Pullman was not an inventor nor an expert mechanic, he possessed ideas and was obliged to work them out by the aid of those whom he engaged for the

No. 3

purpose. When he adopted a plan for an upper berth, it was met with the objection that it would necessitate the addition of about two and one-half feet to the height of the car, as well as several inches to the width. What railway would run its trains with cars of unequal height? Mr. Pullman argued that it would be better to raise the height of all cars and thereby improve the standard of car construction and he risked all he had upon the ultimate success of his idea." His first car, the Pioneer, finished in 1865, was constructed according to the plans outlined above and contained the upper berths originated by Ellingwood. This feature of car construction had been duly patented, but Mr. Pullman did not claim the invention as his own. Considerable space is given to a history of the development of the business of the company and the building of the town of Pullman.

In these sketches the writer has endeavored to establish beyond question two facts—that George M. Pullman was for a short time a resident of Grand Rapids and that he was not the inventor of the Pullman sleeping car. He was a man of great force of character; he originated and developed a great business enterprise; he was an able financier and a sagacious manager of a very important manufacturing business. He achieved that which entitled him to be justly recognized as the father of long distance travel by rail, for he made long distance travel not only possible but comfortable, even luxurious, and his accomplishment ensures his name a place on the list of great men of business of the nineteenth century.

A. S. White.

An "Interest in the Business."

Every worker, in every line of business, has an "interest in it," or ought to feel it. It is distinctly to his interests that the business shall be a success, consequently he should school himself from the start to consider himself a vital part of the business and individually responsible for its success. It is noticeable in every branch of commerce that the clerks and helpers who take this kind of an interest in the business are the ones that climb the quickest into the most responsible and best-paying positions, and subsequently become entitled to a real, financial interest in the concern.

But such people are few and far between. The great majority of workers in all commercial walks of life center their interest in the salary or wages they are paid, and the time they are supposed to give in working for the stipend. They are clock-watchers and pay-chasers, having no further interest in the house employing them than getting as much as they can for the least expended time. Among the greatest and the smallest concerns, enthusiasm on the part of employes is a rarity.

This is decidedly wrong, even from a selfish, personal viewpoint. It is the individual effort that makes the collective success—the labors of the least important workers help, proportionately, as much as the higher-paid and better-brained employes. It is the individual energy which makes the successful whole, and success to the house means success—or promotion—for the workers who have contributed to the achievement.

If employes would only get it deeply impressed in their minds that active loyalty to the house or individual employing them is the surest bid for future promotion there would be less apathy in stores, factories and offices. But the average employe is afraid of doing too much for his concern—if it is not in his particular line he thinks he has no right to do the work. He is afraid of working five or ten minutes overtime at night, but is not so particular in getting to his post on time in the mornings.

The writer only recently was in conversation with two clerks employed by a large city concern, and was astonished to find that neither of the two were aware that their concern was advertising in the newspapers and by posters. They did not believe it when told, yet, if they were doing their duty, they ought to have been familiar with the advertising and know just what it claimed. He ought to know all about his house and what it is doing to increase its trade. He should be helping it to increase, even in the humblest way—but still helping.

Both Workers.

"I hear your new minister is very efficient."

"Oh, yes."

"How about his wife? Is she doing anything to bring the people to church?"

"Indeed, she is! Wears a different gown every Sunday."

Symons Brothers & Company
Wholesale Grocers
Saginaw :: Michigan

Dandelion Vegetable Butter Color
A perfectly Pure Vegetable Butter Color and one that complies with the pure food laws of every State and of the United States.
Manufactured by Wells & Richardson Co. Burlington, Vt.

Specify Jennings Extracts
They cost a few cents more but the sale is quicker and quality better—There's a reason!
Direct or of your Jobbers
JENNINGS FLAVORING EXTRACT CO.
Grand Rapids, Mich.

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Specify Jennings Extracts
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Direct or of your Jobbers
JENNINGS FLAVORING EXTRACT CO.
Grand Rapids, Mich.

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Insert

RAILWAY REVIEW.
CHICAGO. SATURDAY MARCH 2, 1912

—The Pullman Co. has issued circulars announcing a reorganization in its system and staff, the new arangement to become effective March 1. On that date the four divisions known as the Northeastern, Southeastern, Northwestern and Southwestern, will be abolished, together with the position of division superintendent and thereafter the company's representatives at New York, Philadelphia, St. Louis, Houston, and San Francisco will be designated as superintendent. Here and elsewhere the company's representatives will have the title of district superintendent, as now and at other places that of agent, with their functions and authority unchanged, except that at New York, Philadelphia and St. Louis the district organization will be merged with that of the superintendent and hereafter all representatives—superintendents, district superintendents and agents—will report to the general offices at Chicago. The following appointments are announced in connection with the above reorganization: A. J. Grant has been appointed superintendent, New York City; J. T. Ransom, superintendent, Philadelphia; F. E. Cook, superintendent, St. Louis; A. V. Burr, superintendent, Houston, Tex.; F. L. Wood, superintendent, San Francisco; J. C. Patterson, assistant to the general superintendent, Chicago; P. L. Randall, assistant superintendent car service, Chicago, and J. L. Walker, superintendent yards and stores. The position of supervisor and cleaner is abolished.

Charles Singleton Sweet, assistant to the president of the Pullman Company, Chicago, died at his residence in Oak Park on June 7. Mr. Sweet was born at Mt. Sterling, Ill., November 3, 1848, graduated from the old Chicago University and the Columbia Law School, and entered the law office of Isham & Lincoln. When Robert T. Lincoln, who later became president of the Pullman Company, was appointed Secretary of War, Mr. Sweet became his secretary and continued in the same capacity for William C. Endicott, secretary of war. For two years he was secretary of the Chicago, Santa Fe & California railway, and then became private secretary to George M. Pullman, continuing in the same capacity when Mr. Lincoln became president. Later he was made assistant to the president. He had been in the service of the Pullman Company for 22 years.

RAILWAY AGE GAZETTE
NY & CHICAGO. FRIDAY JUNE 14. 1912

RAILWAY AGE,
FRIDAY APRIL 5. 1912

First Aid Packets for Pullman Cars.

The Pullman Company has completed plans for the adoption of emergency packages for first aid to the injured, which will be installed in all of the cars of the company during the next few weeks. The first aid package consists of a small box 5 in. x 3 in. x 1 in., containing a small supply of sterilized lint, bandage and pins, intended to answer the purpose of a primary dressing, and to remain in place only until the person injured may be able to receive the care of a surgeon. Six of these units will be packed in a carton and will be a part of the equipment of every car. An attempt has been made to bring the first aid package to the greatest possible simplicity in order that it may be available for use by persons who may be entirely untrained in the application of surgical dressings. Although the purpose of the contents will be apparent to anyone in whose hands it is placed, the package contains a few simple directions. A somewhat similar, though rather more complicated first aid package has been in use by the company for a long time in its cleaning yards and other places where workmen are employed, and its usefulness has been demonstrated. It is now proposed to substitute in this service packages similar to those to be installed in the cars.

Capacity, water .....8100 gallons
Capacity, coal .....14 tons

Electrification of the Butte, Anaconda & Pacific Ry., 2400 Volts Direct Current.

Construction work in connection with the electrification of the Butte, Anaconda & Pacific Ry., in the state of Montana, is now progressing actively, and it is the expectation that the entire installation will be completed and electric operation commenced by the fore part of next year. This piece of work is of exceptional interest because it represents one of the largest installations of electrical equipment for steam railroad service, and the first in this country where 2400-volt direct current locomotives will be employed. The section of the road to be equipped is that between Butte and Anaconda, Mont., comprising about 30 miles of main line single track and a total single track mileage including the sidings, smelter tracks, etc., of approximately 114 miles. The remaining 24 miles to track, embracing the mine tracks on Butte Hill, minor sidings, etc., will continue to be operated by steam; although it is probable that the entire system will be electrified at an early date.

The 2400-volt direct current system was adopted by this road after a careful and exhaustive study of local conditions. In comparison with other existing systems, it was found best suited for the heavy steam road service handled over its tracks. The main line trains of the Chicago, Milwaukee & Puget Sound Ry. run over the Butte, Anaconda & Pacific for a distance of 16 miles, which calls for trunk line freight and passenger service in addition to the heavy local freight traffic. The haulage of freight consists principally of copper ore from the Butte Mines to the smelters at Anaconda, and with mine supplies, lumber, etc., moving in both directions, amounts to approximately 5,000,000 tons of freight per year. Complete trains, weighing 3400 tons and made up of 50 loaded steel ore cars, will be handled by two locomotives against a ruling grade of 0.3 per cent. Single locomotives will be used for making up trains in the yards and for spotting cars.

The entire electrical equipment for this installation is being furnished by the General Electric Co. Seventeen 2400-volt direct current locomotives of the articulated truck type, each weighing 75 tons, have been ordered. Each locomotive will be equipped with four GE-229, 1200-volt, commutating pole, twin geared railway motors, insulated for operation two in series on 2400 volts. The motors are designed throughout to secure exceptionally good ventilation, and a forced circulation of air will be employed in addition to the ventilation secured by the fan incorporated in the armature. Control of the motors will be effected through special Sprague-General Electric type M control equipments, a dynamotor being used to furnish current at 600 volts for the operation of the contactors, lights and air compressor. The dynamotor will have two windings, 1800 volts and 600 volts, and will be direct connected to a blower for ventilating the motors. Heating of the locomotive cabs will be accomplished by means of special heaters using 2400-volt direct current direct from the trolley circuit.

Interior of Kitchen, Steel Dining Cars, Pennsylvania R. R.

Two of the quota of locomotives are designed for passenger service. A schedule of eight passenger trains per day, four each way ,is maintained for local traffic, and the average train is composed of a locomotive and three standard steam road passenger cars. The passenger locomotives will be duplicates of the freight locomotives, except that they will be geared for higher speed. When hauling a train of three coaches they will be capable of running 45 miles per hour on level track. Current for lighting the cars will be taken from the 600 volt circuit of the dynamotor, and for heating the coaches will be tapped from the 2400-volt trolley circuit on the locomotive.

Two 2400-volt substations are being installed, one at Butte and the other at Anaconda, 26 miles apart. Duplicate equipments are to be installed in the two stations and will each consist of two 1000-kw. synchronous motor-generator sets, each composed of two 500-kw., 1200-volt compound wound, compensated, commutating pole generators insulated for operation in series at 2400 volts, direct connected to a 1450-kva., 2300-volt, three-phase, 60-cycle synchronous motor; also two 50-kw. induction motor exciter sets, and alternating current and direct current switchboards. Power for operating the motor generator sets will be supplied from the 2300-volt, 60-cycle, three-phase buses in the substation of the Great Falls Power Co., to which power is transmitted at 50,000 volts from the hydraulic power stations of the company.

A TA regulator will be installed in each substation to maintain constant voltage automatically at the terminals of the synchronous motors. Through this method of operation the possibility of the sets dropping out of step on extreme overloads will be eliminated. The direct current switchboard will follow standard practice for 1200 volts with remote control circuit breakers and switches. The feeder circuits and generator circuits will be protected by 2400-volt direct current aluminum cell lightning arresters.

Current for operating the locomotives will be taken from overhead conductors. A special flexible catenary trolley suspension will be used over the larger part of the line, with direct suspension over some of the difficult sidings, smelter tracks, etc. Side brackets and cross span construction will be employed where local conditions demand. Numerous yards are to be electrified, and at one point it will be necessary to span twelve tracks, which will be accomplished by cross span construction, using a third pole between the eighth and ninth tracks. Lightning arresters of the 2400-volt, ME type, will protect the overhead lines.

The Butte, Anaconda & Pacific is a most important link in a transcontinental railroad system and its electrification is attracting widespread attention. The fact that the substations are located 26 miles apart and but a moderate amount of feeder copper is required, notwithstanding the heavy traffic handled, strongly emphasizes the advantages of the high voltage direct current system. It is safe to predict that the operating results secured on this road will be closely watched by all the great systems having similar difficult situations where their lines cross the great divide that separates the western plains from the Pacific coast.

Interior of Dining Compartment, Steel Dining Cars, Pennsylvania R. R.

Steel Dining Cars for the Pennsylvania R. R.

The Pennsylvania R. R. has lately addad a number of new steel diners to its dining car equipment, representing several departures from the usual arrangement and construction that have been prompted by the demand for greater facility and capacity in serving the patrons of its lines. The cars in the first place are unusually large and heavy, being 82 ft. 3¾ ins. in length over buffers and weighing 147,500 pounds. The construction of the car body is of steel throughout, in accordance with standard designs, developed in the office of the mechanical engineer at Altoona, Pa. The trucks are likewise of the Pennsylvania R. R. six-wheel pedestal type with exterior side bearings, as have for some time been standard on the heavy passenger equipment used on that road.

The novel feature of this car consists in the elimination of platform space, thus sufficiently increasing the length of the dining room space to permit of the installation of two additional tables and making it possible to seat 36 persons at one time. Without undue haste it has been possible to serve 108 persons in one of these cars in three hours time. The dining compartment is 39 ft. long, the pantry is 6 ft. 8 ins. long and the kitchen is 19 ft. 10 ins. long. The kitchen refrigerator is placed in one corner against the end bulkhead, the door on that side giving entrance to the kitchen direct instead of onto the end plat-

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Capacity, water .....8100 gallons
Capacity, coal .....14 tons

Electrification of the Butte, Anaconda & Pacific Ry., 2400 Volts Direct Current.

Construction work in connection with the electrification of the Butte, Anaconda & Pacific Ry., in the state of Montana, is now progressing actively, and it is the expectation that the entire installation will be completed and electric operation commenced by the fore part of next year. This piece of work is of exceptional interest because it represents one of the largest installations of electrical equipment for steam railroad service, and the first in this country where 2400-volt direct current locomotives will be employed. The section of the road to be equipped is that between Butte and Anaconda, Mont., comprising about 30 miles of main line single track and a total single track mileage including the sidings, smelter tracks, etc., of approximately 114 miles. The remaining 24 miles to track, embracing the mine tracks on Butte Hill, minor sidings, etc., will continue to be operated by steam; although it is probable that the entire system will be electrified at an early date.

The 2400-volt direct current system was adopted by this road after a careful and exhaustive study of local conditions. In comparison with other existing systems, it was found best suited for the heavy steam road service handled over its tracks. The main line trains of the Chicago, Milwaukee & Puget Sound Ry. run over the Butte, Anaconda & Pacific for a distance of 16 miles, which calls for trunk line freight and passenger service in addition to the heavy local freight traffic. The haulage of freight consists principally of copper ore from the Butte Mines to the smelters at Anaconda, and with mine supplies, lumber, etc., moving in both directions, amounts to approximately 5,000,000 tons of freight per year. Complete trains, weighing 3400 tons and made up of 50 loaded steel ore cars, will be handled by two locomotives against a ruling grade of 0.3 per cent. Single locomotives will be used for making up trains in the yards and for spotting cars.

The entire electrical equipment for this installation is being furnished by the General Electric Co. Seventeen 2400-volt direct current locomotives of the articulated truck type, each weighing 75 tons, have been ordered. Each locomotive will be equipped with four GE-229, 1200-volt, commutating pole, twin geared railway motors, insulated for operation two in series on 2400 volts. The motors are designed throughout to secure exceptionally good ventilation, and a forced circulation of air will be employed in addition to the ventilation secured by the fan incorporated in the armature. Control of the motors will be effected through special Sprague-General Electric type M control equipments, a dynamotor being used to furnish current at 600 volts for the operation of the contactors, lights and air compressor. The dynamotor will have two windings, 1800 volts and 600 volts, and will be direct connected to a blower for ventilating the motors. Heating of the locomotive cabs will be accomplished by means of special heaters using 2400-volt direct current direct from the trolley circuit.

Interior of Kitchen, Steel Dining Cars, Pennsylvania R. R.

Interior of Dining Compartment, Steel Dining Cars, Pennsylvania R. R.

Two of the quota of locomotives are designed for passenger service. A schedule of eight passenger trains per day, four each way, is maintained for local traffic, and the average train is composed of a locomotive and three standard steam road passenger cars. The passenger locomotives will be duplicates of the freight locomotives, except that they will be geared for higher speed. When hauling a train of three coaches they will be capable of running 45 miles per hour on level track. Current for lighting the cars will be taken from the 600 volt circuit of the dynamotor, and for heating the coaches will be tapped from the 2400-volt trolley circuit on the locomotive.

Two 2400-volt substations are being installed, one at Butte and the other at Anaconda, 26 miles apart. Duplicate equipments are to be installed in the two stations and will each consist of two 1000-kw. synchronous motor-generator sets, each composed of two 500-kw., 1200-volt compound wound, compensated, commutating pole generators insulated for operation in series at 2400 volts, direct connected to a 1450-kva., 2200-volt, three-phase, 60-cycle synchronous motor; also two 50-kw. induction motor exciter sets, and alternating current and direct current switchboards. Power for operating the motor generator sets will be supplied from the 2300-volt, 60-cycle, three-phase buses in the substation of the Great Falls Power Co., to which power is transmitted at 50,000 volts from the hydraulic power stations of the company.

A TA regulator will be installed in each substation to maintain constant voltage automatically at the terminals of the synchronous motors. Through this method of operation the possibility of the sets dropping out of step on extreme overloads will be eliminated. The direct current switchboard will follow standard practice for 1200 volts with remote control circuit breakers and switches. The feeder circuits and generator circuits will be protected by 2400-volt direct current aluminum cell lightning arresters.

Current for operating the locomotives will be taken from overhead conductors. A special flexible catenary trolley suspension will be used over the larger part of the line, with direct suspension over some of the difficult sidings, smelter tracks, etc. Side brackets and cross span construction will be employed where local conditions demand. Numerous yards are to be electrified, and at one point it will be necessary to span twelve tracks, which will be accomplished by cross span construction, using a third pole between the eighth and ninth tracks. Lightning arresters of the 2400-volt, ME type, will protect the overhead lines.

The Butte, Anaconda & Pacific is a most important link in a transcontinental railroad system and its electrification is attracting widespread attention. The fact that the substations are located 26 miles apart and but a moderate amount of feeder copper is required, notwithstanding the heavy traffic handled, strongly emphasizes the advantages of the high voltage direct current system. It is safe to predict that the operating results secured on this road will be closely watched by all the great systems having similar difficult situations where their lines cross the great divide that separates the western plains from the Pacific coast.

Steel Dining Cars for the Pennsylvania R. R.

The Pennsylvania R. R. has lately addad a number of new steel diners to its dining car equipment, representing several departures from the usual arrangement and construction that have been prompted by the demand for greater facility and capacity in serving the patrons of its lines. The cars in the first place are unusually large and heavy, being 82 ft. 3¾ ins. in length over buffers and weighing 147,500 pounds. The construction of the car body is of steel throughout, in accordance with standard designs, developed in the office of the mechanical engineer at Altoona, Pa. The trucks are likewise of the Pennsylvania R. R. six-wheel pedestal type with exterior side bearings, as have for some time been standard on the heavy passenger equipment used on that road.

The novel feature of this car consists in the elimination of platform space, thus sufficiently increasing the length of the dining room space to permit of the installation of two additional tables and making it possible to seat 36 persons at one time. Without undue haste it has been possible to serve 108 persons in one of these cars in three hours time. The dining compartment is 39 ft. long, the pantry is 6 ft. 8 ins. long and the kitchen is 19 ft. 10 ins. long. The kitchen refrigerator is placed in one corner against the end bulkhead, the door on that side giving entrance to the kitchen direct instead of onto the end plat-

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form as in most designs. At the opposite end of the car a space of 6 ft. 10 ins. is devoted to lockers on the one side and a buffet on the other. A side door is provided at this end, also, to facilitate stocking the steward's department. A new feature has also been introduced by the employment of a pantryman whose duties consist in looking after dairy foods, ices, condiments, fruits, etc., greatly facilitating the work of the waiters.

A sliding door is provided to shut off the kitchen and pantry from the dining compartment and fans at either end of the kitchen serve to free that space from odors and smoke. The dining compartment is finished in French gray with maroon striping and is lighted both by side and overhead brackets and by table candle-lamps, current for which is supplied from a 32-cell storage battery located underneath the car.

Platform of the Democratic Party.

Last week we published those parts of the platform of the Republican party which concern directly or indirectly the transportation interests. This week the Democrats, in their national convention at Baltimore, issued the platform on which they will base their claim for the support of the voters of the country. The following extracts will engage the attention of the railway man and the managements of related industries:

Tariff Reform.—We declare it to be a fundamental principle of the Democratic party that the federal government, under the constitution, has no right or power to impose or collect tariff duties, except for the purpose of revenue, and we demand that the collection of such taxes shall be limited to the necessities of government, honestly and economically administered.

The high Republican tariff is the principal cause of the unequal distribution of wealth, it is a system of taxation which makes the rich richer and the poor poorer. Under its operations the American farmer and laboring man are the chief sufferers. It raises the cost of the necessaries of life to them, but does not protect their product or wages.

The farmer sells largely in free markets and buys almost entirely in the protected markets. In the most highly protected industries, such as cotton and wool, steel and iron, the wages of the laborers are the lowest paid in any of our industries. We denounce the Republican pretense on that subject and assert that American wages are established by competitive conditions and not by the tariff.

We favor the immediate downward revision of the existing high and, in many cases, prohibitive tariff duties, insisting that material reductions be speedily made upon the necessaries of life. Articles entering into competition with trust-controlled products and articles of American manufacture which are sold abroad more cheaply than at home should be put upon the free list.

We recognize that our system of tariff taxation is intimately connected with the business of the country and we favor the ultimate attainment of the principles we advocate by legislation that will not injure or destroy legitimate industry.

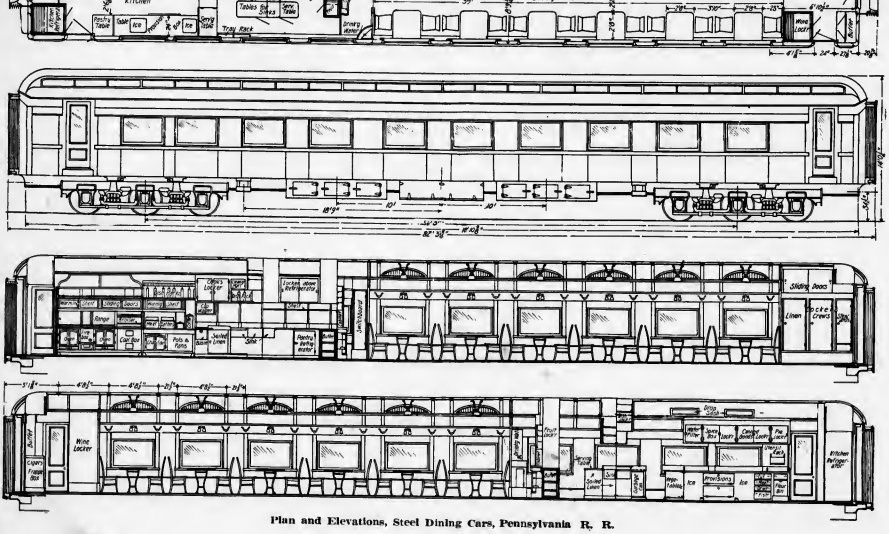
We denounce the action of President Taft, in vetoing the bills to reduce the tariff in the cotton, woolen, metals, and chemical schedules and the farmers' free list bill, all of which were designed to give immediate relief to the masses from the exactions of the trusts.

The Republican party, while promising tariff revision has shown by its tariff legislation that such revision is not to be in the people's interest; and having been faithless to its pledges of 1908 it should no longer enjoy the confidence of the nation. We appeal to the American people to support us in our demand for a tariff for revenue only.

High Cost of Living.—The high cost of living is a serious problem in every American home. The Republican party in its platform, attempts to escape from responsibility for present conditions by denying that they are due to a protective tariff. We take issue with them on this subject and charge that excessive prices result in a large measure from the high tariff laws enacted and maintained by the Republican party and from trusts and commercial conspiracies fostered and encouraged by such laws, and we assert that no substantial relief can be secured for the people until import duties on the necessaries of life are materially reduced and these criminal conspiracies broken up.

Anti-Trust Law.—A private monopoly is inde-

Interior of Kitchen, Steel Dining Cars, Pennsylvania R. R.



Plan and Elevations, Steel Dining Cars, Pennsylvania R. R.

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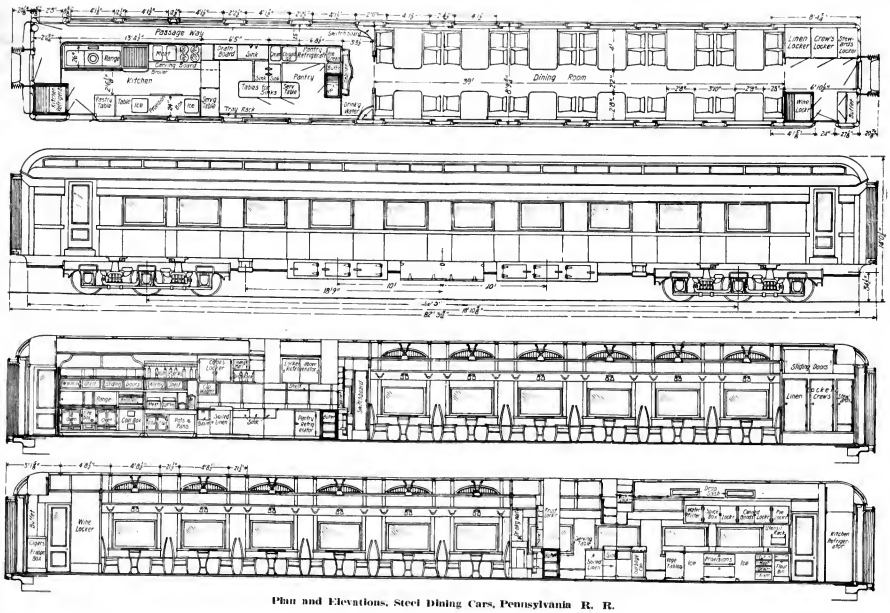

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any considerable period at all? Surely it cannot be logical to conclude that one collision in 20 years condemns a manual block system, and at the same time conclude that no collisions in practically no experience with automatic train control demonstrates the desirability and success of automatic stops. The recommendation that automatic stops be adopted and used at the earliest possible moment, skipping over, as it does, the automatic block system, which, properly installed and managed, has been the most effective preventive of collisions, and seizing upon safeguards which have yet to be proved practicable, and, after that, desirable, in steam road service cannot be taken seriously—except, perhaps, by the busy promoters of automatic stops for stock-jobbing purposes. The *Railway Age Gazette* is not against automatic stops, but it refrains from advocating them for the same reasons that railway commissions should refrain from recommending them, except, perhaps, for experimental purposes, viz., that no device of that kind has proved its practicability by actual service tests under the varying conditions of steam railway operation, and that it has not yet been determined that it would be desirable to use automatic stops generally in steam railway service, even if they should prove practicable.

The recommendation that the flagging rule be changed to determine the minimum distance that a flagman should go back would have railways revert to the use of a rule which, after eight years of use by American and Canadian railways, was decided to be unsatisfactory. In another column appears a letter from H. W. Forman arguing against a change in the flagging rule on the understanding that the *Railway Age Gazette* favored such change in an editorial in its issue of July 26. Mr. Forman misunderstood; this paper did not in that editorial "advocate specific instructions for flagmen under different conditions," but merely that whatever the flagging rule may be, more pains shall be taken to see that it is properly understood and strictly obeyed. The original flagging rule, which was adopted in 1887 by the American Railway Association, was so framed that each road could specify the distance which its flagmen should go back. The present flagging rule, whatever its merits or demerits, was substituted in 1895 after five years of deliberation and discussion.

ARNOLD BENNETT ON AMERICAN TRAINS DE LUXE.

THE descriptions of the service and equipment of our best limited passenger trains, as published by the railways, often stimulate expectation to a point that exceeds realization; and the traveler who pays an excess fare for special comforts and splendid surroundings may end his journey with a feeling of dissatisfaction. This feeling is not so pronounced with our own people who have grown accustomed to the peculiarities of the ordinary American sleeping car accommodations as with tourists from Europe who are accustomed to the peculiarities of their own modes of travel. Opinions as to the relative merits of the different services are usually largely results of habit and taste. A former editor of this paper, discussing the same subject, illustrated the point with a boy's opinion of goats: "Some people think they smell bad, but I think it is lovely." Much depends on the point of view.

It is seldom that an author of such prominence as Arnold Bennett has described in detail the shortcomings and minor faults of our trains de luxe, and railway managers can read with much entertainment and not a little profit his article on this subject in the August number of *Harper's Magazine*. His admiration as well as his disappointment are expressed in such forceful, yet picturesque, language that we are disposed to quote freely, while making some running comments on the opinions of this distinguished writer.

The article describes his experiences on journeys on two of the best trains in the country—the Congressional Limited from New York to Washington, and the Twentieth Century Limited from New York to Chicago. Unfortunately, the trips were made in severely cold weather when the defects of both service and equipment are most pronounced; and the defects due to this condition are those which call forth most of Mr. Bennett's criticism.

Starting from the Pennsylvania station in New York, he finds the building "full of the noble qualities that fine and heroic imagination alone can give." "There existed a railway man poetic and audacious enough to want it, architects with genius powerful enough to create it, and the public with heart enough to love it. Such a monument does not spring up by chance; it is part of the slow flowering of a nation's secret spirit." As no trains or tracks are in sight from the main waiting room, he is uncertain whether it is the tomb of our great railway president or a cathedral. Across "boundless plains of granite" he descends by a "secret staircase" and beholds the resplendent train. The steel cars are the first subject for harsh criticism. He finds they are inhospitable and do not yield; the imitation of wood in the interior finish is not a triumph of artistic propriety. Why should steel be made to look like wood, he asks. Why should it not, we ask. Cold steel may be appropriate for a boiler room or a rolling mill, but for the interior decoration of a drawing room or sleeping apartment the beautiful tones of mahogany are certainly more pleasing; and our critic admits the triumph of the imitation in the painting of the steel surfaces. The inside finish of our steel Pullman cars, which are painted in imitation of mahogany, are far more beautiful and artistic than those of any cars we have seen in England, or France, or Germany. There the soft wood finish is usually grained in cheap imitation of the hard wood, and is ugly to the extent of intolerable dreariness.

Mr. Bennett, in his technical ignorance, does not regard the steel car as fireproof or strong; "the decoration does not atone for probable combustibility and proved fragility." He is not certain about their being fireproof, but is cocksure that they are brittle. To answer this would lead us into interminable detail equal to that of the author's own "Ann of the Five Towns"; and it must suffice to say that steel passenger cars as now built in America are so much stronger, and so proof against fire (if we must use that expression instead of "fireproof"), as compared with wooden cars, that they make travel much safer and are well justified. Our steel cars are so much stronger than the best cars on any European railway, that to speak of their "proved fragility" causes the engineer to regard the expression as a piece of modern fiction.

Those martinets that we Americans call conductors, flagmen and porters now pass in review. They are "like admirals, captains and first officers pacing bridges; clearly they owned the train and kindly lent it to the railway. Their demeanor expressed a rare sense of ownership, also of responsibility. While very polite, they condescended." In trying to view the landscape our author found the tops of the windows so low that it was necessary to bend the head and crick the neck; and it must be admitted that the large, fixed windows in an English parlor car are more satisfactory.

The return trip by sleeper from Washington to New York is described in a manner which strongly illustrates the foreign point of view. He had not imagined "anything so appalling as the confined, stifling, malodorous promiscuity of the American sleeping car." It is compared with the mild horrors of Siberian prisons as described by George Kennan. The corresponding accommodation provided by European railways at a higher price places four strangers in a small compartment where all these horrors are intensified. The American only chooses to take his "horrors" in the open car with the slight privacy which the curtain provides. However, the author praises the luxuriousness and beauty of the stateroom which he occupied.

The train has not moved from the station, and the start is made by an "angry engine-driver" who sets his teeth and hisses while saying, "Now, then, come out of that, you sluggards!" There is a ferocious tug, a fearful jerk, and repeated concus-

Interior of Steel Passenger Car After Fire Test.

material of a fire-communicating nature to encourage its spreading that the back of one of the seats not more than ten feet from the center of the blaze was damaged only on the side toward the fire. Except for the likelihood of suffocation in the smoke generated, a person could have remained in the opposite end of the car throughout the test without actual danger of being injured by fire. At the time of this experiment, owing to the importance of keeping down overhead weight and the desirability of employing a non-sweating material, it had not been found practicable to use a totally fire-resisting headlining; hence as was expected, this material was disintegrated, exposing the insulating fabric with which it had been backed up. While much of the filler was burned out of this insulation, large sections of the asbestos fabric can still be seen practically intact. While the floor carried this fire without protection the damage thereto, for all practical purposes, was negligible, it having added no fuel of any kind to the flames. Naturally the plates and mouldings in the vicinity of the fire were buckled and warped to an extent that required their renewal, although none of the framing members were materially injured. Externally, the paint below the belt rail was barely scorched although around and above the windows it was quite burned off, giving the only evidence noticeable at a distance of forty or fifty yards that anything unusual had happened to the car.

A vastly different condition as respects the wooden car is readily noted. This car was one of several involved in the destruction of a certain car shop some months ago. Four similarly constructed cars, it is understood, were completely destroyed, it being beyond the ability of the firemen to save them. Comparing the interior and exterior views it is evident that this fire also was one confined to the interior, in which as previously mentioned, the combustibles afforded by upholstered car seats were lacking. Left to itself, this car would most certainly have burned down to the trucks, as it is the entire structure above the floor is useless. It is fair to believe that the steel car under similar conditions, even without the efforts of the firemen to save it, would have suffered no greater injury than scorched paint and broken glass.

President's Address at the Roadmasters' Convention.*

This association stands out strong and healthy and unique in the category of societies, in that for three decades, its record is one of absolute devotion to duty, utter unselfishness and selfeffacement on the part of the members, who have had but one object in view and that, the upbuilding of the American railroad; not in theory, but in solid, practical bettering of the ways and means to do the work, and by improving material and tools to do that work, and by improving the personnel of its working forces by meeting in convention each year and profiting by each other's experience; promulgating their deliberations and conclusions in readable form to every railroad in America, Canada and, sometimes, to lands across the sea, with no thought of self.

Its founders were that type of men who did not know defeat. And I want to pay loving tribute to the memory of those of them who have passed beyond this earthly sphere and tender grateful compliments to those who are still spared to enjoy the fruits of their labor in well earned rest and retirement, but who are no longer able to meet with us here, to those still in active life but in other branches of business, and last, but most sincerely, those whom we still count among our own.

Not all of you may recall the beautiful lines that were inscribed over the peristyle, the lake entrance to the gorgeous World's Columbian Exposition, at Chicago in 1893; many of you may not know it was [illegible]en there. These are the lines:

> "But bolder they who first off cast
> Their moorings from the habitual past;
> And ventured chartless on the sea
> Of storm engendering liberty."

Thus, my friends, the designer, the builder, those cunning in every art and science who had reared this immense fabric and laid down the gauntlet, bowed in homage to those venturesome souls who first braved the "storm engendering sea of liberty." And so to-day, I want to lay on the altar of kind remembrance, our love, our reverence, our respect, and our homage, to those devoted men who first launched this, our beloved association, practically chartless, out onto the "storm engendering sea" of its existence and guided it with unerring hand on and up to where we, in twentieth century splendor and enlightenment, stand to-day. Gentlemen, the names of Burnett, Craig, Sloan, Stearns, Moll, Jones, Lovell, Jordan, Adamson, Galarneau, Doyle, Swinney, Linsley, Hickey, Meade and scores of others, the fathers of our Association, stand for all that was best in their profession and best for us who were decreed to follow in their footsteps. Their's were the mud tracks, light rails, stub switches, extemporized frogs, fenceless right of way, pit cattle guards, and countless other excuses of what we have in their perfection now—that if we saw them, I doubt if we could give them a name.

The object of the Association was to meet and discuss questions pertaining to maintenance of way and to raise the standard of work committed to the charge of its members, and it has carried it out to the letter (with perhaps one exception) each recurring year showing a decided gain over its predecessor both in larger and more important matters reported upon by committees, fuller and more comprehensive discussions, higher standards aimed at,

*From the address of President Andrew M. Clough at the 30th annual convention of the Roadmasters' and Maintenance of Way Association, Buffalo, N. Y., Sept. 10, 1912.

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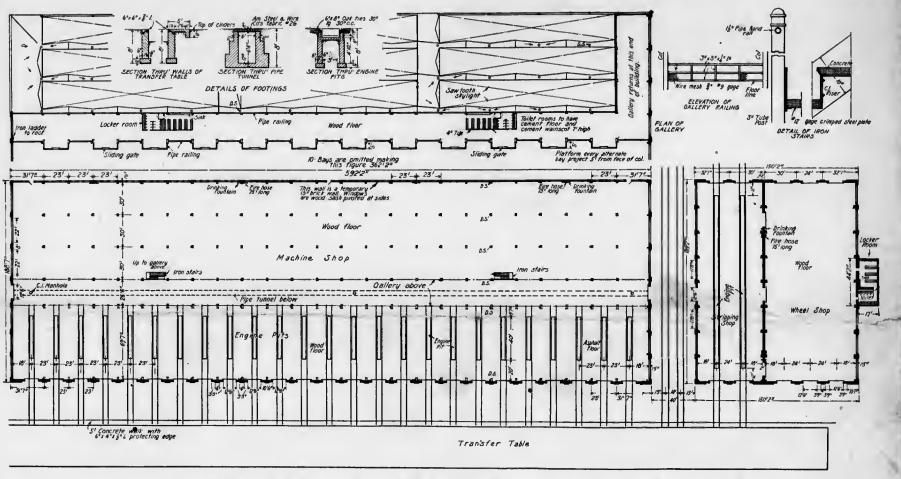
Exterior of Wheel and Erecting Shops, Chicago & Northwestern Ry., Chicago.



General Plans of Wheel and Erecting Shops, Chicago & Northwestern Ry., Chicago.

Interior of Stripping Shop, Chicago & Northwestern Ry., Chicago.

and a decidedly firmer stand taken upon the enlarging, strengthening and improving of all articles and material needed and used in constructing track and maintaining the same. Heavier rails, better joints, improved frogs and switches, better ballast, improved tools, tables of mileage, of sections and the number of men on the same, standard lists of tools and their description, tie plugs, tie plates; and, in more recent years, tie preservation, stone ballast, artificial ties, gasoline cars, and so forth, showing that the association has been ever alive to the necessities confronting it in the heavier equipment and faster speed and every contingency of the day and age, even before it was apparent to any but the trained eye or prophetic instinct of the men who were virtually living in and with their vocations. So that to-day, we stand well up in the perfection of material and devices needed in our profession and do not have the same problems to grapple with that our predecessors had. Our present status is more in further perfecting, making better and stronger and by more improved methods, carrying along on a larger and more rapid scale innumerable designs, customs, and usages devised two or three decades ago, and largely by those men who this morning we are delighted to honor and who, I am sure, we most willingly concede were bolder and better men than we are.

As to our future, who can say what it will be? Certainly, there will be no standing still nor will there be any retrogressing. Although I do not predict much change in the fundamental principle of our track construction, rails will yet be made heavier and ties constructed of different material. Frogs and switches, while the same in principle, will be made heavier and improved. Crushed rock ballast will be universally used, improved means of propulsion for cars of our working forces will be generally used and detail articles will multiply and improve and fill wants long apparent. Evidence of this will be found in the magnificent display of the Track Supply Association on the parlor floor.

Program of the Railway Signal Association.

The program for the convention of the Railway Signal Association, to be held in Quebec, Canada, October 8, 9 and 10, has now been prepared, and

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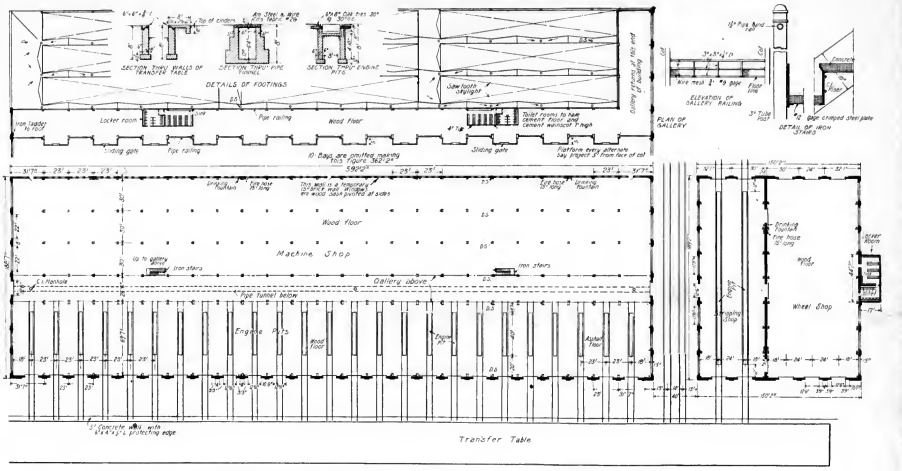

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—The Pullman Co. has issued its annual report for the last fiscal year ended July 31, 1912, which compares with the previous year as follows:

Year ended July 31:	1912	1911
Earnings from car service	$37,630,485	$36,389,258
Manufacturing, interest and rentals	2,589,262	2,605,354
Totals	$40,219,747	$38,994,610
Operating expenses	22,,608,178	23,043,701
Balance	$17,611,569	$15,950,909
Depreciation	4,859,097	4,477,434
Balance	$12,752,472	$11,473,475
Proportion of net earnings paid others	324,014	333,443
Net earnings	$12,428,458	$11,040,032
Reserved for depreciation	2,000,000	.....
Balance	$10,428,458	$11,040,032
Dividends declared	9,598,460	9,599,336
Surplus	$ 828,998	$ 1,540,696
Previous surplus	2,055,383	514,687
Total surplus	$ 2,884,381	$ 2,055,383

The company will pay its quarterly dividend of two dollars per share on November 15, 1912, to stockholders of record on October 31 1[illegible]

RAILWAY REVIEW. CHICAGO SAT. OCT. 26. 1912

Annual Report of the Pullman Company.

The income account of the Pullman Company, as shown by the annual statement for the fiscal year ending July 31, 1912, is as follows:

Revenue.		
From earnings of cars	$37,630,485.90	
From manufacturing, rentals, interest, etc.	2,589,262.13	
		$40,219,748.03
Expenses.		
Operating expenses, repairs of cars, taxes and insurance	$22,608,177.66	
Proportion of net earnings paid other interests in Sleeping Car Associations controlled and operated by this company	324,013.93	
Depreciation on cars wrecked and destroyed or otherwise disposed of, and on cars transferred from Standard to Tourist, etc.	465,462.30	
Depreciation on cars in general	4,393,635.86	
Reserve for further depreciation on cars in general	2,000,000.00	
Dividends declared	9,599,460.00	
		39,390,749.75
Excess of Revenue over Expenses, applicable to Surplus Account		$828,998.28

The item of $2,000,000 for further depreciation is in anticipation of the heavy depreciation caused by the necessity for more expensive equipment. The total assets of the company amounted to $150,885,991, some of the principal items being: 5,979 cars and equipments, $98,246,371; operating supplies, linen, etc., $4,597,772; securities, $9,214,167; cash, $11,893,523; and manufacturing department plants and investments, $20,136,408. The amount invested in other car associations controlled and operated by the company was $1,088,041, which brings the total number of cars owned and controlled up to 6,229. The total liabilities were $148,001,610, leaving a net surplus of $2,884,381. The capital stock is $120,000,000. The accounts payable amounted to $7,248,417; reserves for depreciation, to $20,497,393; and other reserve and adjustment accounts, to $255,799.

Following the annual meeting on November 13, President John S. Runnells gave out a statement showing that the total number of passengers carried during the year was 24,256,000, as compared with 23,182,000 in 1911, an increase of 4.6 per cent. The average number of men on the payrolls of the manufacturing department was 7,645, and wages paid amounted to $6,705,000. The average earnings per passenger for the year showed a decrease of 2.3 per cent., caused principally by the reduction of 20 per cent. in the rates for upper berths.

TRADE PUBLICATIONS.

Vises.—The Emmert Manufacturing Company, Waynesboro, Pa., has published a small illustrated folder on its vises, giving descriptions, dimensions and prices.

RAILWAY AGE GAZETTE N.Y. & CHICAGO. FRIDAY NOV 29. 1912.

RAILWAY AGE GAZETTE, N.Y. CHICAGO. FRIDAY. JAN. 3. 1913.

NO. 1.

The Pullman Company on the New Haven Road.

The New York, New Haven & Hartford announces the transfer of its parlor and sleeping car service to the Pullman company under a contract dated January 1, 1913, and running twenty years. The Pullman company will take over the parlor and sleeping cars owned by the New Haven, paying, it is understood, about $3,500,000, and will gradually introduce steel cars, the first replacement being on the limited trains. All of the employees of the New Haven service will be retained, their pay and relative positions being unchanged. They will be under the supervision of A. J. Grant, Pullman superintendent, Grand Central Terminal, New York City.

The parlor and sleeping car conductors of the New York, New Haven & Hartford have adopted resolutions reading in part: "Whereas in the vicissitudes of railroad life we are about to be transferred to the employment of the Pullman Company, and whereas the majority of our number having been employed by the New Haven road upward of 15 years, and whereas there has always existed a most cordial and just treatment of us by our superior, be it Resolved, That we extend to President Charles S. Mellen and the board of directors our thanks for the just and kindly consideration and treatment of us during our long years of service, and that we extend to our beloved superintendent, A. G. Webb, our sincere thanks for his just, kindly and courteous treatment. . . ." " "

RAILWAY REVIEW, CHICAGO, SAT. JAN. 4. 1913.

be taken to bring about this improvement.

New York, New Haven & Hartford.—The New York, New Haven & Hartford R. R. is reported to have transferred the parlor and sleeping car service of the corporation to the Pullman Co. The transfer was made under a signed contract dated Jan. 1, 1913, and will run for 20 years. The step is taken by the New York, New Haven & Hartford R. R., it is explained, in order to comply with the recommendation of the interstate commerce commission in regard to sleeping cars.

The Steel Car as a Fire-Proof Structure.

The most widely published object in bringing out the steel passenger car was the building of a structure which, in case of accident, would be able to resist, not only the wreck itself, but also that horrible accompaniment to wrecks of wooden cars—fire. Due to a combination of features in present day car construction, notably the more extended use of non-inflammable materials and the adoption of illuminating systems not requiring considerable stores of high combustibles, the dreaded calamity of fire in passenger train wreckage has been eliminated to a highly gratifying degree. From the illustrations presented herewith something of an idea may be gained as to the relative fire resisting qualities of the two forms of construction, although the comparison is not wholly fair to the steel car from the fact that the wooden car, being a baggage car, contained none of the inflammable, upholstery with which the steel car was equipped, and also from the fact that it was saved from complete destruction only through the efforts of the fire department in quenching the general conflagration by which the car happened to be surrounded.

As regards the steel car, shown herewith, it may be stated that it is one used by a certain road to demonstrate to just what extent the superstructure could be damaged by a fire of sufficient intensity to consume the seats, the most inflammable articles retained in the equipment of steel coaches. Six seats from obsolete cars, but containing practically the same materials as do those in the new cars, were accordingly set up on either side of the aisle at one end of the car otherwise devoid of furnishings, and a full equipment of windows with oak sash was installed. In the aisle at the center of the area containing the seats, there was stacked up a quantity of shavings and cuttings sufficient to make a conical pile which filled the aisle as high as the arms of the seats, and over this were mounted on cross pieces, two open cans containing five gallons each of gasoline. Upon being ignited these materials within a very few minutes liberated sufficient heat to break all windows and deck lights in the immediate vicinity of the fire, which burned with such fierceness as to completely exhaust itself as well as to consume the seats in about twenty minutes from the time the fire was started. Irrespective of the intensity and volume of the fire and the fact that no influence whatever was brought to bear upon it, there was so little

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Corporation, Norfolk, Va., is said to have contracts for construction work.

The Missouri, Kansas & Texas Railway Company will expend more than $2,000,000 during the present year for improvements and general betterments on its right of way in Texas, according to official announcement made by this company. Heavier rails will also replace light rails on some divisions.

According to the figures compiled by the Railway Age Gazette, more than 2,997 miles of steam lines were constructed in 1912, about seventy miles less than in 1911. North Dakota shows the greatest increase of mileage, with 346 miles; Texas second, with 335; Oklahoma, 242; Florida, 182; Georgia, 153; Montana, 150; Arizona, Idaho and Washington, each, 105 miles; West Virginia, 100. Several states increased over seventy-five miles.

It is reported that the Lake Shore & Michigan Southern will erect near Gary, Ind., an extensive exchange warehouse the coming spring, to be used in transferring less than carload freight. This system is to do away with handling so much freight through Chicago. The string of warehouses are said to occupy a distance of two miles when completed, and will be receiving houses for goods from several lines.

NORTHERN PACIFIC STATION AT NORTH YAKIMA, WASH.

NORTHERN PACIFIC PASSENGER STATION AT NORTH YAKIMA.

The Northern Pacific railway has been making considerable improvements on the road the last few years, among which are the handsome new passenger stations at various points. The accompanying illustration is the likeness of the new station recently erected at North Yakima, Wash. This is one of the numerous costly passenger stations that now adorn the right-of-way on the Northern Pacific between St. Paul and the Pacific coast points.

The structure is 232 feet long. The building is symmetrical on each side of a story-center portion, which is 46 feet wide and 42 feet long. The wings are one story high, 40 feet wide and 61 feet long. At each end is a roofed-over space or covered platform 34 feet long. The entire east wing is a general waiting room and the greater part of the west wing is used for baggage. The center portion of building contains ticket office, smoking room and men's toilet on the track side and a large ladies' retiring room, ladies' toilet, stairs and janitor's room, etc., on the street or city side. A wide passage runs longitudinally through center and connects the general waiting room with baggage counter at end of passage. From the center passage, leads the stairways to second floor and basement and also cross passages to each side of building and exit to platform. The second floor is divided into offices. A large cellar is located under the two-story portion in which is installed the steam heating plant, room for batteries, etc. The clear height of rooms of first story is 17 feet. In the general waiting room the attic space is utilized in form of a cupola over the center portion, the clear height of which is 26 feet.

The eve projection from face of walls is 6 ft. 6 ins. around the entire building. The awning thus formed is ceiled horizontally.

The foundation, cellar walls, and subfloor are of concrete. Exterior walls are brick; pressed brick from Hebron, N. D., are used for face brick. Water table, sill course and gable copings are of sandstone quarried at Tenino, Wash. Roofing material, Ludowici tile; interior floors are terrazzo, except baggage room and second floor which is Washington fir. The entire finished portion of first floor is wainscoted 6 feet high with white enameled brick, balance of wall and ceiling is plastered with hard cement plaster. The general waiting room has heavy beamed ceilings, ornamented in stucco. All plastered surfaces are painted. All interior wood trimmings and settees, etc., are of solid oak with golden oak finish. The building and platforms are electrically lighted. The depot platform is made of Seattle paving brick with concrete curbing around all edges.

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Ventilation of Passenger Cars.

In an editorial on the above subject in our issue of March 8, the opinion was expressed that insufficient provision is made for the admission of outside air to passenger cars which depend for ventilation, on the exhaust and other systems whereby foul air is extracted at or in the vicinity of the deck sash: it being contended that window and door construction is generally too close fitting, when doors and windows are closed, to justify dependent on leakage alone for the necessary air supply. In a communication since received from Dr. Thomas R. Crowder, superintendent of sanitation for the Pullman Co., he takes pronounced exception to this opinion and submits the accompanying chart which shows a summary of a very elaborate series of tests conducted by him to determine the efficiency of various ventilation systems as applied to sleeping cars, and compares the conditions there found to those existing in other public places and conveyances. From this it will be seen that the sleeping cars tested show improved condition in every case over the other public facilities tested and shows that much of the popular clamor against passenger car ventilation, or at least sleeping car ventilation, is not well founded. In his investigations of this subject Dr. Crowder has determined that the respiratory discomforts which passengers experience are more usually due to overheating, excess humidity and lack of air movement, rather than to actual foulness of air. He regards the present-day ventilating apparatus entirely adequate to meet the requirements of health, and likewise of comfort providing conditions be such as to permit the ready abstraction of body heat.

In the editorial above referred to, there is a typographical error which impairs the sense of the last paragraph of the article. In the second line of this paragraph the last word should be "automatically," instead of "materially," as printed.

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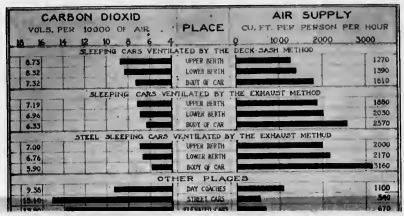
The Cortlandt Street ferry house and dock, New York city, which are being rebuilt, have so far

Chart Showing Comparative Effectiveness of Ventilation in Sleeping Cars and Other Public Places and Conveyances.



Railway Age Gazette, N.Y.-Chicago Friday April 4. 1913.

The Pullman-Car Porter.

Lemuel, our porter, is about 50, solid, round, smiling and black, as black can be. It was his proverbial good nature that invited intimacy, and as he blacked away at the shoes I got from him the outlines of the story of the day's work:

"I live on West Twenty-sixth street, New York City. I must be on duty at Hoboken at 6:30 p. m. My train leaves at 9 p. m., but I must have my car all ready, with half the berths made up. My run ends at 9 in the morning. After that I must clean and dust my car, change the linen, and make up about 10 berths so as to be ready at night. It is noon when I am done. Then I get my breakfast. I have the afternoon to myself. I go to bed somewhere. I must be at the car at quarter before 9 in the evening. The train leaves at 9:15. It reaches New York about 8 in the morning. Then I must clean and dust my car, change the linen, cross the river to my home on Twenty-sixth street, shave, wash off this Pullman dirt, get my breakfast and then go to bed. I make eight of these round-trips, one night out and the next night back. Then I am supposed to have one-round trip off. I do not get more than one-half these lay-offs, because so often there is no one to take my place. I have been on this run for 13 years. It is 650 miles round-trip. I get over four hours' sleep every day, besides the naps I catch on the way."

Of course those of us who travel with Lemuel and know him piece out his stipend by practical appreciation of his kindness and faithfulness. But it is the man and the corporation that loom before us whenever we think of his shiny black face. Why worry about him when he does not seem to worry about himself? But he is a man, a real gentleman. He is industrious, sober, kind. He seems to act so like all true folk that some of us who know a brother human when we meet him cannot be indifferent to his long, long days of unillumined, uninspiring grind. . . . He knows how to get along with nervous women and boorish men. But why in the name of all that is rich and reasonable in our civilization need we overwork and underpay Lemuel? Why should we scrimp his sleep to four hours in 24, with a few cat-naps thrown in?—*The Universalist Leader.*

American Sleeping Cars.

Perhaps if enough respectable English critics will consent to come over here and inspect our sleeping cars and then go back home to write of their discomforts, their shocking lack of privacy, their immodesty, and so on, we shall the sooner see that the critics are perfectly right. No one of intelligence that we have ever heard of defends the American sleeping car. And yet the sleeper trundles stuffily on, mingling the breathings of the inmates, re-echoing the snores of the few who are able to sleep at all, revealing all stages of deshabille that in any other circumstances would be blushed for, and causing unanimous curses. The Pullman people go on doggedly building sleepers that no other country would dream of using, and the railroads go on permitting such cars to be run in their night trains. We know of no other defiance of public sentiment to compare with this. —*Lowell Courier-Citizen.*

112

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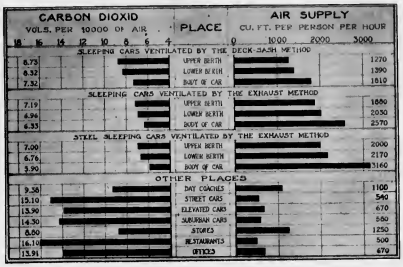
CARBON DIOXIDE
VOLS. PER 10000 OF AIR
18 16 14 12 10 8 6 4
PLACE
AIR SUPPLY
CU. FT. PER PERSON PER HOUR
0 1000 2000 3000
SLEEPING CARS VENTILATED BY THE DECK-SASH METHOD
6.73 UPPER BERTH 1270
6.32 LOWER BERTH 1390
7.32 BODY OF CAR 1810
SLEEPING CARS VENTILATED BY THE EXHAUST METHOD
7.19 UPPER BERTH 1850
6.96 LOWER BERTH 2030
6.33 BODY OF CAR 2570
STEEL SLEEPING CARS VENTILATED BY THE EXHAUST METHOD
7.00 UPPER BERTH 2000
6.76 LOWER BERTH 2170
3.90 BODY OF CAR 5160
OTHER PLACES
9.58 DAY COACHES 1100
15.10 STREET CARS 540
13.90 ELEVATED CARS 670
14.30 SUBURBAN CARS 580
8.00 STORES 1250
16.10 RESTAURANTS 500
13.91 OFFICES 670

RAILWAY REVIEW, CHICAGO, SAT. MARCH 15, 1913.

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RAILWAY REVIEW-CHICA

Chicago. Saturday.

Pennsylvania Railroad's Pension System 13 Ye Old.

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"It is impossible to continue this building and developing of railroads without more capital. To obtain that capital, the railroads must have credit; credit that will withstand the scrutiny of the banker of Lombard street, as well as appeal to the investor in Philadelphia. That credit cannot be assured and maintained unless the railroads are permitted to earn sufficient revenue to have left over at the end of the year a surplus out of which to make the necessary improvements which do not add to the earning power of the company, and which yet assure the investor of the productive value, both now and prospective, of the enterprise in which he proposes to put his money.

"The railroads of this country pay the highest wages of any country in the world. They pay more to the support of the government in taxation, proportioned to the capital invested, than is paid in any country in the world. They do their work upon less capital and they do more work upon their capital, than is done in any country in the world. In addition, the railroads of this country haul freight cheaper than is done in any other country in the world. Confronted, therefore, with such costs as have been noted, not to speak of the growing cost of materials and wages, is it not absolutely proper that the railways should ask, on their own behalf as well as on behalf of the puhlic they seek to serve, that a small increase he made in the rates of freight?"

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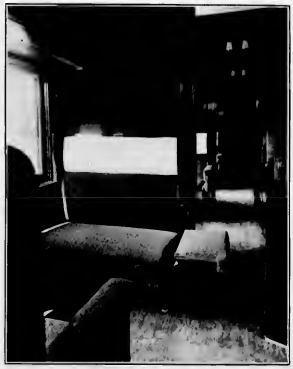

Improved Seat for Pullman Compartment Cars, Arm Dropped for Reclining.

Improved Seat for Pullman Compartment Cars, Arm Up in Normal Position.

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The Pullman Company has fitted all compartment cars in use on the Twentieth Century Limited train, of the New York Central lines, between New York and Chicago, with this type of seats; and a number of cars in use on other runs have been and are being equipped in the same manner. The improvement, of course, does not apply to other than compartment cars, for the dropping of the arm would obstruct the aisle of the ordinary Pullman cars. Patents on the device are owned by the inventress, Mrs. Smith, whose address is mentioned above.

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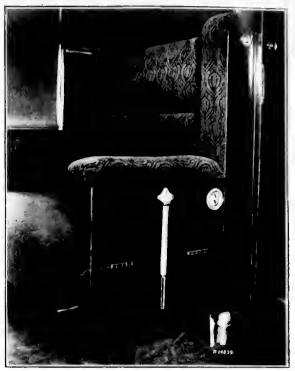

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[illegible] of the Brewers of Pennsylvania [illegible]

.ILWAY AND ENGINEERING RE[illegible] 13.

aking long trips for material and thus securing neir greater application to the work. This prinipte of handling is in universal practice on pracically each and every item of material, the obective point being to prevent charges for materia ntil actually required.

In the practice of issuing supplies and stationery rom [illegible] monthly I might re- er t un c point quen othe g s nake nste nand geno of o

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An arrangement [illegible] anta Fe whereby the store department periodically makes a check of way-car equipment, and even though requisitions for this class of supplies are approved by trainmasters and superintendents, it is amazing in how short a time a surplus will accumulate. Just a short while ago a check of thirty-two cars resulted in the return to stock of $2,291.94 worth of supplies not required, an average of $71.62 per car. The return to stock of these items, of course, affects the operating cost of a railroad.

Proper or improper methods used in connection with distributing grain doors will lower or raise the cost of operation on this particular class of material. Considerable benefit is derived from regular monthly reports from each agent showing exactly the number on hand and the number required. With this information constantly at hand it is an easy matter to supply a shortage at one point from an overage at another, thus keeping

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Friday

fort, and with it the required weight on drivers, will be seriously increased by any material increase in rate of acceleration or by any material steepening of the grade.

In ordinary trunk line work no very great rates of acceleration are required. The weight on drivers found in ordinary locomotives is quite sufficient for the purpose. In suburban service in the neighborhood of the big cities, matters are changed, however. In order to make reasonable schedule speed with stops from one to two miles apart or less, it is necessary that trains get under way as fast as possible. This means that the rate of acceleration is pushed up and with it, up goes the tractive effort required and the weight on drivers. We generally find that the first step taken to meet this condition is the development of some special type of suburban locomotives with an exceptional amount of weight on drivers. But there are cases where this is not sufficient. In real rapid transit work rates of acceleration of 2 miles per hour per second and more are not uncommon. To start a train of say 300 tons at this rate will, according to formula (1), require for starting effort alone a force of

$$f_1 = 100 \times 300 \times 2 = 60{,}000 \text{ lbs.},$$

to which must be added the effort necessary to overcome friction and grade. And, according to formula (6), the minimum weight on drivers corresponding to this force is

$$w'' = \frac{60{,}000}{0.22} = 273{,}000 \text{ lbs.}$$

To place such values in high speed passenger locomotives is not easy, and the difficulty is increased with every increase in train weight and rate of acceleration. The problem is solved by substituting motor cars for locomotives. Instead of concentrating our motive power on from two to four axles of the locomotive, we distribute it throughout the train over as many axles as necessary, and in that way we have no difficulty in placing as much weight on drivers as may be called for by the highest feasible rates of acceleration.

This is the reason why suburban service is best handled by motor car trains. And it explains how such lines as the Manhattan Elevated, or the New York Central, were able to materially increase their schedule speed when they supplanted their steam locomotives by electric motor cars.

The effect of increase of grade on weight on drivers is somewhat different. It is particularly noticeable in heavy freight service. On the level or on low grades we find ordinary locomotives quite heavy enough to haul even the heaviest of trains. When it comes to grades in the neighborhood of 2 per cent. and above, things are different. To run a train of say 2,000 tons up a grade of 3 per cent. will, according to formula (2), require for the overcoming of the grade alone a force of

$$f_2 = 20 \times 2{,}000 \times 3 = 120{,}000 \text{ lbs.},$$

to which must be added the effort necessary to overcome friction. The minimum weight on drivers, corresponding to this force, is according to formula (6)

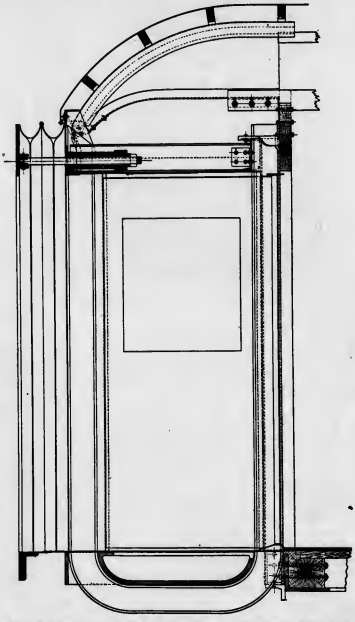
$$w'' = \frac{120{,}000}{0.22} = 546{,}000 \text{ lbs.}$$

Values of this order cannot readily be placed in an ordinary locomotive, nor for that matter in a locomotive of the Mallet articulated type. The use of individual electric motors under freight cars has not yet been seriously suggested. Thus we find service of this nature handled by double heading or the use of pusher locomotives in steam operation, and by multiple unit locomotives in electric work.

It is well to thoroughly realize that in both of the cases cited above, the question of speed and the question of power of the engine or motor did not enter. It was merely a question of weight on the drivers in order to be able to give the required tractive effort. In the first instance the increased weight on drivers was required in order to give a satisfactory rate of acceleration, in the second instance in order to overcome an extra steep grade. The questions connected with speed and horse power will be taken up in the next article.

NEW END CONSTRUCTION FOR PULLMAN CARS.

From a study of recent wrecks of passenger cars it has become apparent to the Pullman Company that a much more substantial end construction for both wooden and steel equipment is necessary to better withstand the shearing effect that a heavy steel underframe of one car has upon the superstructure of another car when this underframe laps over that of the car ahead in a collision. As a means to greatly reduce, if not to wholly eliminate the destructive effects in such cases, this company has adopted a new type of end construction which is shown in the illustrations. This design is the invention of Richmond Dean, general manager of the Pullman Company. All of the modern Pullman equipment is provided with the Commonwealth steel underframe, which has a cast steel combined platform and double body bolster at each end. This underframe readily permits of the new end construction in combination with which a very efficient arrangement is obtained.



Side Elevation of U-Shaped Member in Pullman End Construction.

The principal feature of the new design is that of an I-beam bent in the form of a U, the legs of which extend upward through apertures in the platform casting. The upper ends of

A

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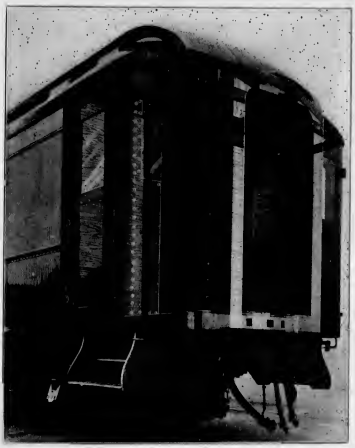
these I-beams are thoroughly anchored in an end superstructure made up of structural shapes. Two of these U-shaped I-beams

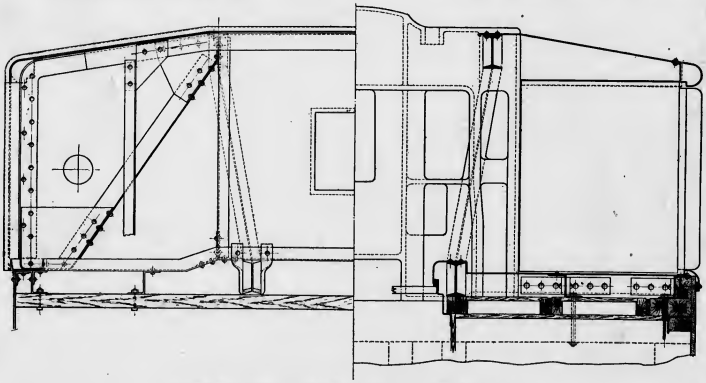


New End Construction for Both Steel and Wooden Cars.

are applied on each end of the car in the manner shown, one leg forming the door post at the entrance of the car, while the other forms the door post for the opening between the cars at the platform end sills. The U-shaped members are made from one continuous I-beam instead of being made up of riveted sections, in order to eliminate any possibility of riveted joints failing. With this construction it is readily seen that in case of collision, should one underframe override that of the next car, its progress will first be obstructed by the legs of the U-beam at the bumper sill, which as they bend will tend to lift the whole car body, thereby offering greater resistance to further advance of the overriding car. If these should fail there would still be the second leg of the U-shaped member, together with the strengthened car end, to further retard the progress of the overriding underframe. From a study of the design it will be seen that this construction is most substantial, and it would seem that it would fully accomplish the results desired.

This new car end is being applied to all new Pullman cars and to all high class wooden cars as they pass through the shops for general repairs. Mr. Dean in his patent claims states that unduly strong underframes, instead of affording the presumed advantages of safety to passengers and of preserving the cars from injury, may, at least in some instances, contribute to the damage of the latter, especially when the force of the collision is sufficient to cause the overriding of the underframes, resulting in the breaking down of the end wall of the car. It is his idea to remove the surplus strength from the underframe and so construct and strengthen the vestibule, as described above, that it will act as a cushion to absorb and dissipate the force of the impact of such a collision without materially increasing the weight of the car. Throughout the construction it has been his idea to reduce the number of riveted joints to a minimum.

The new car body end wall is securely fastened to the cast steel combined platform and double body bolster, and is made up of Z-bar end posts extending to the top of the roof, and secured to the other parts of the car framing in the usual manner. The outer faces of these posts are riveted to a channel sill above the doorway, which is bent to allow for the rear legs of the heavy U-shaped I-beams; the remainder of the vestibule is constructed to harmonize with the new features. It is believed that this new design will be the means of preventing the disastrous results that have been recently experienced with the ordinary type of end construction in collisions.



Top and Floor Plans of New End Construction for Pullman Cars.

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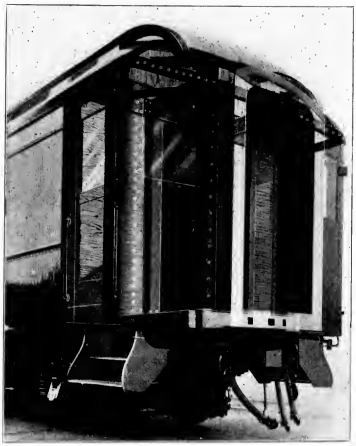

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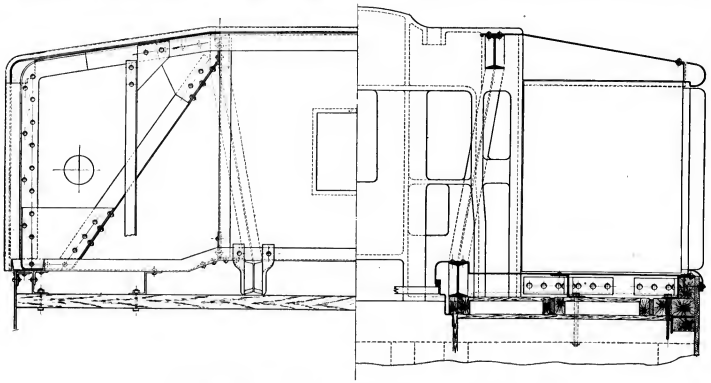

Top and Floor Plans of New End Construction for Pullman Cars.

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RAILWAY AGE GAZETTE.

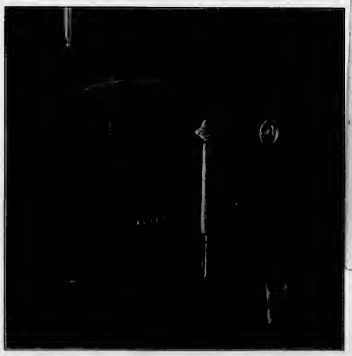
GE GAZETTE. NY CHI. FRIDAY JUNE 6.1913. 1229

as a cushion to prevent the valve slamming when closing. This valve is manufactured by the Golden-Anderson Valve Specialty Company, Pittsburgh, Pa.

CONVERTIBLE SEAT FOR COMPARTMENT CARS.

Sleeping car berths are not as wide as could be desired because of the limitations placed on the width of the cars, and the necessity of providing sufficient aisle space. In compartment cars, however, where there is a separate passageway through the car outside the compartments, there is no objection to using the aisle for extending the berths, and some of the compartment sleeping cars running in the Twentieth Cen-

Seat End in Position for Extending Berth.



Seat End Locked in Position for Day Travel.

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RAILWAY AGE GAZETTE.
NY & CHICAGO. FRIDAY. DEC 6.1912.

The Pullman Company now has approximately 12,000 men on its payroll in the manufacturing department, as compared with an average of 7,645 in the last fiscal year, of which 3,000 are working overtime. The freight car department is running at about 75 per cent. of its capacity, with orders for about 14,000 cars on the books. The passenger department is running at nearly full capacity.

Railway age Gazette
NY Chicago. Friday Sep 12/13

OBITUARY.

Frederick C. N. Robertson, auditor of the Pullman Co. at Chicago, died on September 9, at Montreal, Que. He was born July 26, 1848, at Toronto, Ont., and was educated at the Model Grammar School and Upper Canada College. Prior to 1882 he was engaged in banking and accounting in Canada, and since that time had been in the service of Pullman's Palace Car Co., and its successor the Pullman Co. From 1882, when he entered the service of Pullman's Palace Car Co., until 1885, he was assistant to auditor, and during the next two years was assistant auditor. In 1887, he was appointed first assistant auditor and on April 1, 1890, was promoted to auditor.

RAILWAY REVIEW · CHICAGO. SAT. OCT 25, 191

—The Pullman Company in its fiscal year ended July 31, 1913, earned total revenues of $42,860,891, the largest in the history of the corporation and an increase of $2,641,144 compared with figures of the previous year. Net earnings were $19,870,206, compared with $17,287,555 in the preceding twelve months. There was deducted $8,729,098 for depreciation, or $1,870,000 more than was written off in the year before on that account, but in spite of this a surplus of $11,141,108 remained available for dividends, which amount is equal to 9.28 per cent on the $120,000,000 capital stock outstanding, comparing with 8.69 per cent earned on the same amount of stock in the previous year. Dividends at the regular rate of 8 per cent were paid during the year and the company carried forward a surplus of $1,541,602, as against $828,889 forwarded in the preceding year. The number of cars controlled by the company is given as 6926.

The income account and balance sheet for the last two fiscal years is given below:

	1913	1912
Earnings from car service	$ 40,196,635	$ 37,630,485
Manufacturing, Int. and rent	2,664,255	2,589,262
Total earnings	$ 42,860,891	$ 40,219,747
Operating expenses	22,633,918	22,608,178
Balance	$ 20,226,973	$ 17,611,569
Depreciation	5,729,099	4,859,097
Balance	$ 14,497,874	$ 12,752,472
Proportion of earnings paid others	356,766	324,014
Balance	$ 14,141,108	$ 12,428,458
Reserved for depreciation	3,000,000	2,000,000
Balance	$ 11,141,108	$ 10,428,458
Dividends declared	9,599,506	9,599,560
Surplus	2,884,381	2,055,383
Total surplus	$ 4,425,983	$ 2,884,381

Assets.

	1913	1912
Real estate, cars and equipment	$115,915,135	$101,762,884
Cash	5,461,968	11,893,523
Securities	9,163,909	9,214,167
Investment in car ass'n.	1,088,041	1,088,041
Manufacturing dept	20,136,408	20,136,408
Operating supplies	4,619,259	4,597,772
Accounts receivable	2,149,051	2,193,195
Totals	$158,543,773	$150,885,992

Liabilities.

Capital stock	$120,000,000	$120,000,000
Accounts payable	5,624,200	7,248,418
Reserve for depreciation, etc	28,493,612	20,753,192
Surplus	4,425,983	2,884,381
Totals	$158,543,773	$150,885,992

The stockholders of the company will hold their [illegible] meeting in Chicago on November 12.

Railway Age Gazette.

GE GAZETTE. NY CHI. FRIDAY JUNE 6, 1913. 1229

as a cushion to prevent the valve slamming when closing. This valve is manufactured by the Golden-Anderson Valve Specialty Company, Pittsburgh, Pa.

CONVERTIBLE SEAT FOR COMPARTMENT CARS.

Sleeping car berths are not as wide as could be desired because of the limitations placed on the width of the cars, and the necessity of providing sufficient aisle space. In compartment cars, however, where there is a separate passageway through the car outside the compartments, there is no objection to using the aisle for extending the berths, and some of the compartment sleeping cars running in the Twentieth Cen-

Seat End in Position for Extending Berth.

Seat End Locked in Position for Day Travel.

115

Railway Age Gazette. NY & Chicago. Friday, Dec 6. 1912.

The Pullman Company now has approximately 12,000 men on its payroll in the manufacturing department, as compared with an average of 7,645 in the last fiscal year, of which 3,000 are working overtime. The freight car department is running at about 75 per cent. of its capacity, with orders for about 14,000 cars on the books. The passenger department is running at nearly full capacity.

Railway Age Gazette NY Chicago. Friday Sept 12/13

OBITUARY.

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Railway Review - Chicago. Sat. Oct 26 1912

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Volume 30 Insert p116a

Pullman Car Equipped with Garland Ventilator.

for a distant signal was responsible for an accident.

In a paper recently read before the Permanent Way Institution of England, by Mr. M. W. Woolridge, that gentleman refers to this same question in the following language:

"You are all familiar with the form of distant signal arm, and know that it is distinguished from the other forms of signals by having a V-shaped notch cut out at the end of the arm to serve as a distinction by day, and you are also aware that a driver can pass this signal at 'danger' but with 'caution.'

"At night these signals have a red light, which signifies 'caution,' and a green light which signifies 'proceed'. The driver has no distinction at night to tell him if it is a distant or a stop signal. This is very inconsistent, and is certainly a very serious flaw in our English system of signaling. Surely it is as necessary for a driver to be able to distinguish a distant signal by night—nay, even more so—as during daylight. There are many inventors, who have tried to provide a distinguishing light, though in only a half-hearted manner, and I think we have something to learn from the Americans in this respect.

"It is the common practice in America to paint the distant signal arms yellow or orange color, and to imitate this by giving the same colored light by night, for a distant signal when at 'caution.' Some companies over there have a very good and consistent rule, namely, that no driver must pass a red light. Therefore, a red light can be used only for stop signals while a yellow light is used for distants. The consistency of this arrangement is undoubtedly valuable, as a driver can never be in doubt as to what he is to do when he sees a red light."

The Garland Car Ventilator.

The question of ventilation of passenger car equipment has been given increasing prominence recently, and several discussions of the subject have brought out the paramount importance to the passengers of an adequate supply of fresh air. Systems and devices in considerable variety have been advocated to accomplish this end, some of them impractical, some inefficient, and some well calculated to meet the end in view. The Garland ventilator which has been before the railroad public for about three years seems to be of this last class, and it has now met with so wide an introduction that a description of the device and its principles of operation will be of some interest.

This ventilator is the invention of T. H. Garland, general agent refrigerator service, Chicago, Burlington & Quincy R. R. at Chicago, and it is handled commercially before the market by the Garland Car Ventilator, 902 Medinah building, Chicago. In its form and the method of applying it, the ventilator is inconspicuous and compact. The accompanying illustration shows a Pullman passenger car of standard type with the Garland device in position. It will be seen that the ventilators lie close to the roof, fitting against the car monitor, and have connection with the interior of the car through openings ordinarily fitted with the deck sash. Its operation is on the aspirator or injector principle, and it performs its duty by withdrawing the foul and vitiated air from the top of the car and exhausting it to the atmosphere, due to the suction produced by the motion of the train.

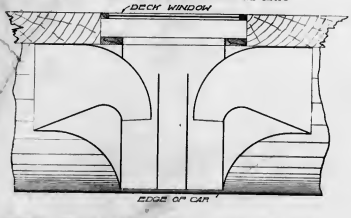
An examination of the construction of the ventilator as shown by the sectional view given herewith would seem to indicate that the theory is sound and well applied. Large openings in the ventilator face toward either end of the car, and these form the ducts through which the air is given most of its application to the purpose of exhaustion. The motion of the car forces the air in quantities into one opening or the other, according to the direction in which the car is moving; and the right angle bend in the duct conveys the air outward and away, leaving the ventilator by the openings at the outer edge of the car roof. In traversing the passage to its exit, the air goes from the intake duct into the transverse duct, and at this point a strong suction is effected which draws the air from the car through the opening provided for that purpose. But this exhausting action is effective also in other ways. Where the air from the intake leaves the ventilator it is drawn backward by the motion of the car and the current of the outside air passing over the mouth of the central duct, making that also effective in ventilating. In fact it is claimed that every passage in the ventilator contributes its share to the work, and the action of the whole is very definite and certain. It makes no difference in which direction the car is moving, and there are no vanes or guides that require adjustment with a change in the direction of travel.

The action of the ventilator being due to the current of air set up by the motion of the car, it follows that the force of the suction and the quantity of the air exhausted from the car will vary directly with the speed of the train. Tests have been made in actual practice, and the following results are reported: At a speed of thirty miles per hour each ventilator takes out of a car 15,000 cu. ft. of air per hour, or ten ventilators on a car (the average number) take out 150,000 cu. ft. per hour. At a speed of forty miles per hour each ventilator takes out 20,000 cu. ft. of air per hour, or ten ventilators 200,000 cu. ft. per hour. At a speed of fifty miles per hour each ventilator exhausts 27,000 cu. ft. per hour, or ten ventilators 270,000 cu. ft. per hour. At a speed of sixty miles per hour each ventilator draws out 36,000 cu. ft. per hour, or ten ventilators 360,000 cu. ft. The air in the car therefore is completely changed in from one to three minutes, according to the rate of speed the train is moving.

The application of the exhaust to the top rather than the lower part of the car gives the apparatus the advantage of the most rational location, for it is the fact that air after being breathed and vitiated rises owing to the increase of temperature. No means are taken thus far in the Garland system for providing specific points for the entrance of fresh air into the car. The cracks about the doors and windows, and the frequent openings afforded as people pass in and out of the car ordinarily are ample to allow sufficient ingress of fresh air for the proper action of the ventilators. Perhaps some benefits would be gained by providing suitable points for the intakes, but such a refinement is not at all necessary. The force of the air moving through the ventilator is stated to be such that no smoke, cinders, rain or snow will ever enter and cause annoyance.

The Garland ventilator is being installed on the passenger car equipment of many leading roads of this country, and it has been adopted as standard by the Pullman Company. Up to the present time, it is stated, the Pullman Company has some 2500 cars equipped with the appliance.

In contriving and perfecting his ventilator Mr. Garland was actuated primarily by his familiarity



Sectional Plan of Garland Ventilator for Passenger Cars.

Application of Garland Ventilator to Refrigerator Cars.

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Volume 30 Insert p1166

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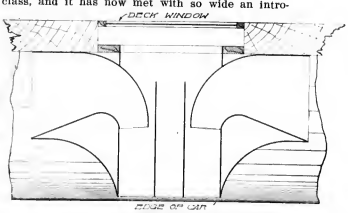

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Application of Garland Ventilator to Refrigerator Cars.

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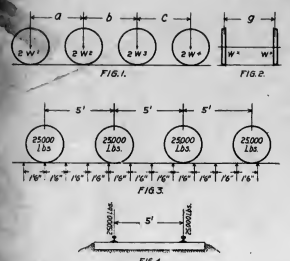


F/G.1. F/G.2. F/G.3. F/G.4.

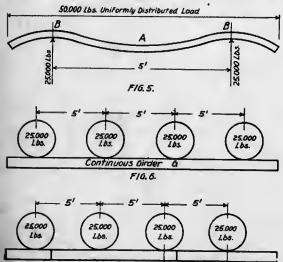
Figs. 1-4.

with the needs of the refrigerator car service, rather than by consideration of the wants of the passenger traffic. The slightest investigation into the handling of fruits, vegetables and other perishable freight in refrigerator cars will reveal the necessity of providing better car ventilation. Hundreds of carloads of berries, peaches, oranges and other fruits are damaged every year on account of insufficient ventilation in refrigerator cars. The upper tiers in the cars become soft or mouldy, due to the warm air and gases that accumulate in the upper part of the car and have no means of escape or being drawn off. Roads handling this class of traffic are called upon to pay thousands of dollars each year on account of poorly ventilated refrigerator cars. To prevent these heavy losses and enable the roads to get shipments through to destination in good condition, an efficient ventilator is a prime necessity.

The construction of the ventilator as applied to this use is practically the same as that for passenger equipment, and the illustration shown herewith will indicate what slight modifications are necessary on account of the changed conditions. The ventilator is applied to the roofs of refrigerator cars in the center of the car between the doors, as shown.

According to the claims of the inventor anemometer tests have shown that when the car is running at a speed of thirty miles per hour, a ventilator of the size shown in the illustrations is capable of exhausting 10,000 cu. ft. of air per hour from the car. As the refrigerator cars thus far equipped have each two of these ventilators, it follows that the total exhaust may be 20,000 cu. ft. per hour. If the car body contains 2000 cu. ft. of air, which is approximately correct, this would mean that all the air in the car would be exhausted ten times per hour. A damper or regulator is provided at the inner end of the opening into the car, so that the ventilation of refrigerator cars can be regulated according to the requirements of the load.

For two years refrigerator cars equipped with this ventilator have been in service. The many tests made are said to show that the warm air and gases that gather in the upper parts of the cars are all drawn off by the ventilator. When cars are under ice the warm air and gases are forced by the cold air from the ice tanks to the center and upper part of the car and remain there unless drawn off at that point by ventilators. The results with ventilation show that when cars are under refrigeration, the same, or nearly the same temperature can be maintained in the upper part of the car as at the bottom. By producing good refrigeration throughout the car, the losses mentioned are prevented.



F/G.5. F/G.6. F/G.7.

Figs. 5-7.

The Problem of Track Support.

By Samuel E. Duff, M. E.

Although all parts of a modern railroad are supposed to be designed according to scientific principles, and with the wisest calculation to avoid waste of material and labor, the design of the most important part is still left to chance, convenience or a blind following of ancient methods, with very little attempt to apply those methods of scientific investigation which have produced the modern steel bridge, the powerful and economical steam locomotive and the steel car, as well as the marvelous development of electrical apparatus for motive power, heating lighting, signaling, etc.

The part of a railroad almost entirely neglected by the trained scientist and investigator is the track structure, by which is meant the rails and their immediate support, considered as a complete structure to be designed and built for satisfactorily fulfilling the duties required of it. It is true that the rails themselves have received great attention from steel experts, both chemical and mechanical, and from men trained in track maintenance and railway operation. The result of this study by scientific and practical men covering many years, and of the accumulated experience of the railroads and the rail manufacturers, has been a standard of shape and quality producing the best results under the conditions recommended. It is also true that a great deal of attention has been given to the cross tie, considered by itself. The use of different kinds of timber, the proper dimensions and spacing, various methods of preserving the wood against decay, the wearing action of the rail base, etc., have been subjects of endless study and discussion.

Of late years a great deal of attention has been given to the use of various other materials for cross ties, such as steel, cast iron, paper, glass, leather, concrete, etc. Exhaustive study of the best means of joining the rails to each other and of fastening them to the cross ties has continued for many years. In spite of all this study there seems to be a strange inclination on the part of all the investigators to consider only one of the several integral parts which, when combined, make up the complete track structure, instead of examining the structure as a whole and applying the principles of design thereto.

For purposes of investigation let us represent a typical load coming on the track by Fig. 1 and Fig. 2. In Fig. 1 we have a series of pairs of moving loads $2w^1$, $2w^2$, $2w^3$, $2w^4$, etc., of different intensity and various spacing. We can assume that the relative intensity of the loads of any set of wheels will not change as they move along the track, although the different speeds of movement, impact from irregularities of the surface, etc., will cause some variation. We can also assume that the spacing of any set of wheels will remain constant, while they pass over any specified section of the track.

In Fig. 2 we have two equal loads W_1 coming at the same time on the two points of support under each axle. As a matter of fact these loads are not always equal, because the action of centrifugal force on curved track, wind loads on the sides of cars, and irregularities in the track surface will tend to vary them, but for the present we will consider them to be equal. Evidently the first requirement is a surface on which to run the wheels. We believe it is safe to assume that the standard T rail at present in use is satisfactory for this particular purpose, as it is the result of many years' study and experience. The next requirement is that these rails must be securely fastened at a constant distance apart so as to at all times support both of the wheels, which are fixed at a constant distance by the axles. Before discussing this requirement we will state the only remaining one, viz.: that the rails be prevented from moving in a vertical direction by some structure that will properly transmit the loads from them onto the road bed. The problem then is to design a structure to take up the horizontal and vertical reactions of a series of pairs of moving loads of constant intensity and fixed spacing running on rails of the standard T shape.

It is evident that on straight track, and in the absence of wind or other disturbing cause the tendency of the rails to move in a horizontal direction is very slight, while on curves where centrifugal force comes into action and the wedging action of the trucks is encountered, or during a high wind blowing across the track, the force tending to separate the rails becomes appreciable. As the wheel flanges are inside of the rails there is practically no force operating to move the rails toward each other. The question of the amount of this force tending to separate the rails has been the subject of a great deal of theoretical investigation and practical experiment, but it is difficult to do anything more than assume a maximum approximation for the purpose of fixing its value with respect to the other forces acting on the structure. We will, therefore, assume it to be 15,000 lbs. at each pair of wheels. As this tension between the rails is constantly moving along them with the movement of the wheels, the question at once arises as to whether or not it is necessary to counteract this force at all points or whether the stiffness of the rail itself can be relied upon to transmit the loads to separate points where they shall be counteracted. Some width must necessarily be given to the head of the rail to provide proper bearing for the wheels, and the same is true of the base, so it is hard to see how a rail could be designed without some stiffness in a horizontal direction.

This observation confirms our acceptance of the standard T rail, which has a wearing surface equal to about one-half its hight and a base equal to its

Fig. 9—Laying Track, Pittsburg Railways Co.

Fig. 8—Track with Longitudinal Steel Supports.

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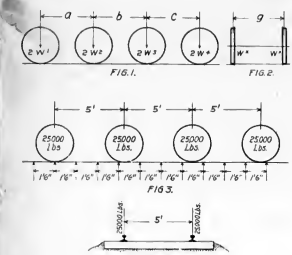

FIG. 1. FIG. 2. FIG. 3. FIG. 4.

Figs. 1-4.

with the needs of the refrigerator car service, rather than by consideration of the wants of the passenger traffic. The slightest investigation into the handling of fruits, vegetables and other perishable freight in refrigerator cars will reveal the necessity of providing better car ventilation. Hundreds of carloads of berries, peaches, oranges and other fruits are damaged every year on account of insufficient ventilation in refrigerator cars. The upper tiers in the cars become soft or mouldy, due to the warm air and gases that accumulate in the upper part of the car and have no means of escape or being drawn off. Roads handling this class of traffic are called upon to pay thousands of dollars each year on account of poorly ventilated refrigerator cars. To prevent these heavy losses and enable the roads to get shipments through to destination in good condition, an efficient ventilator is a prime necessity.

The construction of the ventilator as applied to this use is practically the same as that for passenger equipment, and the illustration shown herewith will indicate what slight modifications are necessary on account of the changed conditions. The ventilator is applied to the roofs of refrigerator cars in the center of the car between the doors, as shown.

According to the claims of the inventor anemometer tests have shown that when the car is running at a speed of thirty miles per hour, a ventilator of the size shown in the illustrations is capable of exhausting 10,000 cu. ft. of air per hour from the car. As the refrigerator cars thus far equipped have each two of these ventilators, it follows that the total exhaust may be 20,000 cu. ft. per hour. If the car body contains 2000 cu. ft. of air, which is approximately correct, this would mean that all the air in the car would be exhausted ten times per hour. A damper or regulator is provided at the inner end of the opening into the car, so that the ventilation of refrigerator cars can be regulated according to the requirements of the load.

For two years refrigerator cars equipped with this ventilator have been in service. The many tests made are said to show that the warm air and gases that gather in the upper parts of the cars are all drawn off by the ventilator. When cars are under ice the warm air and gases are forced by the cold air from the ice tanks to the center and upper part of the car and remain there unless drawn off at that point by ventilators. The results with ventilation show that when cars are under refrigeration, the same, or nearly the same temperature can be maintained in the upper part of the car as at the bottom. By producing good refrigeration throughout the car, the losses mentioned are prevented.

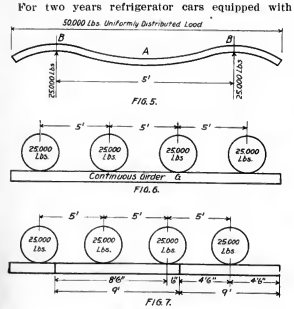

FIG. 5. FIG. 6. FIG. 7.

Figs. 5-7.

The Problem of Track Support.

By Samuel E. Duff, M. E.

Although all parts of a modern railroad are supposed to be designed according to scientific principles, and with the wisest calculation to avoid waste of material and labor, the design of the most important part is still left to chance, convenience or a blind following of ancient methods, with very little attempt to apply those methods of scientific investigation which have produced the modern steel bridge, the powerful and economical steam locomotive and the steel car, as well as the marvelous development of electrical apparatus for motive power, heating lighting, signaling, etc.

The part of a railroad almost entirely neglected by the trained scientist and investigator is the track structure, by which is meant the rails and their immediate support, considered as a complete structure to be designed and built for satisfactorily fulfilling the duties required of it. It is true that the rails themselves have received great attention from steel experts, both chemical and mechanical, and from men trained in track maintenance and railway operation. The result of this study by scientific and practical men covering many years, and of the accumulated experience of the railroads and the rail manufacturers, has been a standard of shape and quality producing the best results under the conditions recommended. It is also true that a great deal of attention has been given to the cross tie, considered by itself. The use of different kinds of timber the proper dimensions and spacing, various methods of preserving the wood against decay, the wearing action of the rail base, etc., have been subjects of endless study and discussion.

Of late years a great deal of attention has been given to the use of various other materials for cross ties, such as steel, cast iron, paper, glass, leather, concrete, etc. Exhaustive study of the best means of joining the rails to each other and of fastening them to the cross ties has continued for many years. In spite of all this study there seems to be a strange inclination on the part of all the investigators to consider only one of the several integral parts which, when combined, make up the complete track structure, instead of examining the structure as a whole and applying the principles of design thereto.

For purposes of investigation let us represent a typical load coming on the track by Fig. 1 and Fig. 2. In Fig. 1 we have a series of pairs of moving loads $2w^1$, $2w^2$, $2w^3$, $2w^4$, etc., of different intensity and various spacing. We can assume that the relative intensity of the loads of any set of wheels will not change as they move along the track, although the different speeds of movement, impact from irregularities of the surface, etc., will cause some variation. We can also assume that the spacing of any set of wheels will remain constant while they pass over any specified section of the track.

In Fig. 2 we have two equal loads W^4 coming at the same time on the two points of support under each axle. As a matter of fact these loads are not always equal, because the action of centrifugal force on curved track, wind loads on the sides of cars, and irregularities in the track surface will tend to vary them, but for the present we will consider them to be equal. Evidently the first requirement is a surface on which to run the wheels. We believe it is safe to assume that the standard T rail at present in use is satisfactory for this particular purpose, as it is the result of many years' study and experience. The next requirement is that these rails must be securely fastened at a constant distance apart so as to at all times support both of the wheels, which are fixed at a constant distance by the axles. Before discussing this requirement we will state the only remaining one, viz.: that the rails be prevented from moving in a vertical direction by some structure that will properly transmit the loads from them onto the road bed. The problem then is to design a structure to take up the horizontal and vertical reactions of a series of pairs of moving loads of constant intensity and fixed spacing running on rails of the standard T shape.

It is evident that on straight track, and in the absence of wind or other disturbing cause the tendency of the rails to move in a horizontal direction is very slight, while on curves where centrifugal force comes into action and the wedging action of the trucks is encountered, or during a high wind blowing across the track, the force tending to separate the rails becomes appreciable. As the wheel flanges are inside of the rails there is practically no force operating to move the rails toward each other. The question of the amount of this force tending to separate the rails has been the subject of a great deal of theoretical investigation and practical experiment, but it is difficult to do anything more than assume a maximum approximation for the purpose of fixing its value with respect to the other forces acting on the structure. We will, therefore, assume it to be 15,000 lbs. at each pair of wheels. As this tension between the rails is constantly moving along them with the movement of the wheels, the question at once arises as to whether or not it is necessary to counteract this force at all points or whether the stiffness of the rail itself can be relied upon to transmit the loads to separate points where they shall be counteracted. Some width must necessarily be given to the head of the rail to provide proper bearing for the wheels, and the same is true of the base, so it is hard to see how a rail could be designed without some stiffness in a horizontal direction.

This observation confirms our acceptance of the standard T rail, which has a wearing surface equal to about one-half its hight and a base equal to its

Fig. 9—Laying Track, Pittsburg Railways Co.

Fig. 8—Track with Longitudinal Steel Supports.

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Envelope
Foldout
✓Insert
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RAILWAY REVIEW
CHICAGO OCT. 17, 1914.

—Gross earnings of the Pullman Company in the fiscal year ended July 31, 1914, were $44,725,514, an increase of $1,864,623 compared with the previous year, and were the largest in the history of the corporation. The year's allowances for depreciation and reserve totalled $10,552,545, and after this and all other deductions there was a balance of $10,834,917, which amount is equal to 9.03 per cent on $120,000,000 capital stock outstanding, comparing with 9.20 per cent on the same amount of stock in the preceding year. Regular dividends were paid and surplus earnings for the year were $1,235,353. A feature of the report is that the reserve for depreciation carried in liabilities has been withdrawn and deducted from the company's car equipment account. At the close of the year this reserve was $32,500,549 and reduces the equipment account to $87,714,134.

The income account compared with that of the previous year follows:

Earnings—	1914	1913
From Cars	$14,068,830	$40,196,635
From mfg., rts., etc.	3,656,684	2,664,255
Total earnings	$44,725,514	$42,860,891
Op. exp., rep., taxes, insurance, etc..	23,047,337	22,638,918
Balance	$21,678,177	$20,226,873
Paid to associate companies	280,714	356,766
Depreciation	7,552,546	5,729,098
Total deductions	$ 7,843,260	$ 6,085,864
Net earnings	13,834,917	14,141,009
Res. for depreciation	3,000,000	3,000,000
Balance	$10,834,917	$11,141,009
Dividends	9,599,564	9,599,506
Surplus for year	$ 1,235,353	$ 1,541,503

Balance Sheet.

Assets.

	1914	1913
Cars and equip	*$87,814,134	$112,440,422
Invested other car assns	.....	1,088,041
Pulman Building	1,068,759	1,068,759
Repair shops	2,008,483	2,408,485
Other real estate	6,762	7,468
Operating sup.	4,837,866	4,619,258
Securities	8,369,184	9,163,909
Cash	8,077,917	5,461,968
Accounts receiv.	1,697,745	2,149,051
Mfg. department	20,136,408	20,136,408
Total assets	$133,917,261	$158,543,772

Liabilities.

Capital stock	$120,000,000	$120,000,000
Accounts payable	7,929,815	5,624,200
Res. for dep.	.....	28,210,450
Other reserve	306,110	283,138
Net surplus	5,671,335	4,425,983
Total	$133,917,261	$158,543,772

*Less $32,500,549 depreciation reserve.

The annual meeting of the stockholders of the Pullman Company will be held in Chicago November 11.

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END OF VOLUME